The Journal of the
American Medical Association

VOL. XVIII. CHICAGO, JANUARY 9, 1892. No. 2.

ORIGINAL ARTICLES.

A SHORT STUDY IN THE THERAPEUTICS OF CHRONIC DISEASE.

BY W. W. VAN VALZAH, A.M., M.D.,
OF NEW YORK.

The results of the surgical treatment of disease are palpable and often brilliant. The wonderful achievements and rapid advances of modern surgery are manifest, and its results can be built up into statistics that will not yield to skepticism's destroying touch. It is not so in medicine, more particularly in the therapeutics of chronic disease. The surgeon believes in the knife because he knows its power, recognizes its limitations, brings other powerful means to its aid, and proceeds in a way often clearly marked out in every detail, to the accomplishment of a definite purpose. The physician's skepticism is born of the obscurity of therapeutic results, faulty and narrow methods, a failure to recognize the limitations imposed by the nature and stage of the morbid process, and a too ready belief in the unaided power of drugs.

Medical statistics are deceptive, and ultimate results come slowly and are conjectural. Our greatest triumphs are in the prevention and control rather than the cure of disease, and the entire good that we do cannot be known. We can check the advances and limit the ravages of chronic disease, and it is our duty to see to it that therapeutic nihilism does not sweep away every landmark and light, and leave us standing with folded arms by the bedside.

Whenever we fail, it is well to pause and consider whether our investigations have been thorough and our purpose clear and comprehensive. And right here most of the trouble lies, for in the rush of work we do not survey the whole field, and the treatment fails because it does not include enough. It must not be directed solely to the symptom group, nor be controlled by the morbid anatomy alone, nor find its only guide in the perversion of the physiological processes. Curative therapeutics must go beyond the symptoms and morbid tissue changes, to the disturbance of the normal relations that cells or aggregates of cells, or the organism, bear to their surroundings. It is the altered chemical reactions and cell relations that make up the canvas on which the clinical picture is painted in the colors of morbid anatomy.

Disease is in its primitive nature a perversion of force, which defines the fixed pathological changes and often dominates the symptomatic expression. This fundamental fact must be clearly recognized before therapeutics can claim to be a science rather than an art, based on the contradictory testimony of experience. It must be grounded in the unchanging laws of physics and chemistry and biology, and find its expression in the terms of force. A system of therapeutics must be broad enough to include the indications afforded by the nature of the incident disturbance, by the perversion of the physiological processes, by the death, degeneration or new formation of tissue, and by the gross symptoms. Every indication may find its place in our plan, and failure in the end crown our efforts because we try to accomplish too much. It may be well to go somewhat into detail, and define some of the necessary limitations of the therapeutics of chronic disease. It would be of value to know precisely what we may attempt to do.

It may be hoped that we shall some day be able to directly endow special cells with particular powers and activities, and the fond hope is not without some foundation. Recent advances lead us to expect that immunity may yet be given against infectious diseases, and certain drugs seem to have a selective affinity for special cells. However this may be, in the present state of knowledge, cell life can only be appreciably influenced or controlled by modifying its environment. The exclusion of bacteria from the wound fluids localizes injuries, and makes healing easy and natural, and the same law is applicable in the management of every form of infectious inflammation. The incident disturbance must be excluded or removed. This principle has a very wide application in the prevention and cure of autoinfection, and is of the greatest value in the treatment of the diseases of the digestive system. In chronic metallic poisoning, as by lead, arsenic or mercury, and in most of the secondary diseases, the treatment is chiefly etiological, directed against the incident disturbance.

Many cases of chronic disease arise from the persistent and almost imperceptible disturbance of the continuous adjustment of relations as manifested in the life processes—the integration of structure, the evolution of force, or the elimination of waste products. The various diatheses are examples of chronic states or evil tendencies indelibly stamped upon the organism in the process of its making. Now it is a predisposition to the development of certain low forms of inflammation—a vice of constitution in which the tissues yield readily to incident disturbance, and have little constructive power. Or it is a defect of nutrition in which the power to assimilate fats is in abeyance or lost, and force production going on at the expense of the proteids of the body, the weak organism, further depressed by the presence of the incompletely elaborated products of tissue waste, falls an easy prey to bacillary or other disease. Now it is the fibrous tissues of the body that show the least resistance. Or it is a hæmic or hepatic state that crops out in the form of gout. Now it is a fault of the more highly evolved nerve centres, and the patient falls a victim to insanity, or is skilfully conducted through life on a sleeping volcano. These evil tendencies cannot be eradicated by treatment, and our purpose in thera-

peutics goes no farther than the prevention or control of the manifestations.

Again, the therapeutics of chronic disease is limited by new tissue formation, by destruction of the anatomical elements, and by deformity.

In acute disease, the incident disturbance falls directly on the functionating cells, which recover or redevelop more or less completely when the morbid influence passes away. In chronic disease, the secreting, eliminating or discharging cells are commonly involved indirectly by the formation of new tissue and compression. The new tissue may simply irritate instead of destroying the cells, as in the recurring violent cortical discharges of certain cases of epilepsy. Now when new connective tissue develops, and is so related to the anatomical elements of the various organs or viscera as to compress them while it undergoes contraction, it may well be doubted whether treatment directed against the local process as represented by the morbid anatomy, does any good whatever, unless it hereafter appears that exception must be made of specific cases. Even when syphilis is known to be the underlying cause, no well authenticated case of cure is on record, so far as I have been able to ascertain. The therapeutics of chronic disease is thus limited by the nature and relations of the newly formed tissue. Our therapeutic purpose should be to remove, when possible, the underlying causative condition—the alcoholism, lead poisoning, syphilis, gout or mycosis; to correct the morbid process, and secure the early absorption of inflammatory products by increased activity of the eliminating organs, by promoting nutrition and the resistance of the tissues, and to restore the lost equilibrium by encouraging compensatory action, and by diminishing the work of the damaged organ.

Chronic disease, again, often arises from a deformity, or from the destruction, or degeneration, or atrophy of the anatomical elements of an organ. The persistence of the symptoms is due to the persistence of the damage done by former disease. A cure is possible only while the morbid process is active. A chronic endocarditis may resolve, but a valvular deformity left by past inflammation is beyond the restorative powers of medicine. We can do nothing to remove the deformity. And when compensation fails, the disturbance of the arterio-venous equilibrium must be met by increasing the power of the heart, and diminishing its work—by a tissue-building diet that does not add to the deposition of fat, a diminution of fluids, and a quiet life, as free as possible from care and strain, and by a judicious use of saline purgatives, heart tonics and arterial dilators, not waiting through dread of exaggerated danger until the lungs, kidneys and digestive organs are damaged beyond repair. When, in syphilitic endarteritis, an embolus or thrombus has closed a terminal cerebral vessel, or the arterial wall has yielded to high tension, and the shock of the onset is over, we can do little more than push the iodides, and hope for a little compensatory action from the opposite hemisphere. We can do nothing to restore the channel through which nutrient material once passed to its destination, and the area of brain tissue is already functionless and undergoing softening — is practically destroyed. When chronic disease falls directly on the anatomical elements of an organ, it is commonly a degenerative process, and if the cells be reproduced, they are weak and imperfectly organized. When glandular atrophy falls upon the snows of age, little can be done to stay the progress of decay; life slowly dissolves beneath its burning rays. But when glandular atrophy from local or infectious disease encroaches upon the strength of youth, as in the gastric atrophy following typhoid fever, or the intestinal atrophy resulting from prolonged distension by the gases of fermentation, treatment is limited, but of some avail. A thorough diagnosis defines and limits therapeutics. But we do more than we know, or are able to explain—we never stand powerless by the bedside. In the hour of transcendent need, the physician, standing in the dim twilight, bends forward into the darkness to strengthen and to bless.

Having briefly indicated how a thorough knowledge of disease defines and limits our therapeutic purpose, turn we now to a consideration of the means that we hold in our hands for its accomplishment.

Our therapeutic purpose in chronic disease is never so simple or so narrow as the prescription of this or that drug—it is the combination of many means to meet complex indications, the treatment of the whole man as disturbed by disease. As we grow old and gray in the service of our calling, the less do we rely on drugs alone. By the proper use of the right drug, we can often snap the thin spun thread of evil sequences, and we will not be persuaded to cast away means of such power and precision. I believe that our object is best accomplished by a systematic combination of means, and it is the union in which "all are needed by each one," that gives the victory. And our first aim should be the promotion of a high degree of healthy nutrition, with a view to increasing the resistance and activity of the tissues; and secondly, the regulation of the patient's life with a view to the readjustment, in the most favorable surroundings, of the damaged organism to vital demands; and in the third place, the rational use of drugs as based on their physiological actions, and as confirmed by clinical experience. This forms the great tripod of treatment.

If one will take the trouble to turn through medical literature, he will be surprised to learn the conspicuous part which has always been assigned in etiology to "impairment of general health." In many cases of acute disease, the most robust constitution yields to the shock of the violent onset. But it is more often the weak and tired who are forced to the wall, a fact abundantly confirmed by the statistics of epidemics. But a well nourished body not only resists invasion; it also limits and conditions and controls the morbid process—has a curative power. A problem to solve in every case of chronic disease is the problem of nutrition, and upon its solution depends the possibility of relief. Who treats chronic disease with success must be a master of dietetics. And it is not enough to adapt the quantity and quality of the food to the vice of nutrition we wish to correct, or the state of nutrition we wish to establish, though this is of very great importance. It is not enough to adapt the quantity and quality of the food to the present state of nutrition, the capability of the digestive organs, the activity of the emunctories, and the evolution of force as conditioned by habits of life and environment—though if this be not done, success will rarely crown our efforts. But the patient must be kept under daily supervision, and the physician must see that the diet is fulfilling its therapeutic purpose, and readjustments be made to meet the varying

indications. If the patient will not or cannot submit to this long and costly supervision, he must go on his way under the delusion that all and the best that can be done is being done for him. The diet must be prescribed on comprehensive scientific principles, with a clear and well defined object in view, and be brought to the test at the bedside, for the clinical test is supreme, and educated common sense must count for something in the dietetic management of chronic disease.

It is not enough to send to the cells a fluid rich in oxygen and in nutrient material, but it must also be free from poisonous products from the portal system and pulmonary veins. The circulation of a pure and rich lymph must be active, so that there be no accumulation of cellular waste. Active oxidation is a strong barrier against autoinfection, if the poison succeed in passing through the liver. But the one great remedy for autoinfection is free elimination by the kidneys, bowels and skin. The best diluent, the best solvent, the best diuretic, is a plentiful supply of fluid—and to liquefy the bile and promote its discharge, to excite peristalsis and clear the alimentary canal, this fluid should be taken hot, in which salicin and a saline may be in many cases with advantage dissolved. In the Cavendish Lecture of 1891, Dr. T. Lauder Brunton speaks of the great value of hot water in the treatment of gout and rheumatism, and lithæmia. The use of cholagogues, diaphoretics and diuretics—especially the natro-benzoate of caffeine —will prove of some value. To secure a high degree of healthy nutrition we need a rich, actively circulating and pure lymph. Every cell must have a clean lymph in which to bathe, and from which to draw its life and strength.

Second in importance only to careful alimentation and active elimination, are the control of the habits of life and the selection of favorable surroundings. Here the indications are so special in individual cases, that little can be said in a general way, and much must be left to the physician's common sense and experience. Under this heading must be included many remedies the value of which is well recognized—a favorable climate, pure air and sunshine, exercise, rest with or without massage, a contented and hopeful mental state, etc.—all contributing to the ease or activity of the circulation, of respiration, and briefly and in a general way, of all the secretory, excretory and nutritive processes.

The tendency of modern drug treatment is local and special. In addition to local antiseptics and local applications as indicated by perverted cell activity in its various manifestations, we have also drugs that tend to keep the fluids of the system sweet, and that affect one or more of the functions of an organ in a special way. We have no so thoroughly efficient local treatment that it cannot obtain some help from constitutional measures, and we should not forget the remedies that aid nutrition, regulate elimination and control neuro-muscular discharges. Drugs that relieve gross symptoms are also of very great value. Pain is in itself an evil, and a drug like opium is curative by conserving vital energy and preventing shock. A persistent high temperature is very destructive, and must be controlled by antipyretics. Many symptom drugs render valuable service in emergencies. But to the aid of drugs must be brought other and more powerful means—the promotion of a high degree of healthy nutrition, free elimination, well ordered habits of life and a favorable environment. Here lies the hottest of the battle, and the hope of victory.

In the management of chronic disease, tact and common sense are worth almost as much as medical knowledge. The course is a long one, and tests the endurance of the physician. I would emphasize the importance of long continued supervision, and minute instructions. The physician, as does also the surgeon, succeeds most often when he is a strict observer of detail, when he knows and remembers and does little things.

My plea is for a broad, and comprehensive, and well defined therapeutics; a plea for the paramount importance of hygiene and dietetics; a plea for the considerate use of drugs; and finally, a plea for the close study of this highest compartment of medical knowledge, in which science and art lie down together.

10 East 43d St.

PARALYSES FOLLOWING ACUTE DISEASES.

BY JOHN FERGUSON, A.M., M.D., Tor., L.R.C.P., Ed.

DEMONSTRATOR OF ANATOMY AND LECTURER ON NERVOUS DISEASES, UNIVERSITY OF TORONTO MEDICAL FACULTY.

There are some varieties of paralyses that follow acute diseases which present some features of great interest. This interest can never cease until the true pathology underlying these cases has been fully worked out. My remarks on the present occasion are with the view, that though they may not settle, they may suggest the lines on which some of these cases may yet be solved. In doing this I shall appeal almost entirely to my own cases. First let me lay down the general ways in which acute diseases may be supposed to act on the nervous matter.

1. That these paralyses are due to the direct action of the virus of the disease.

2. That they are due to some poison left in the system by the disease; and that acts after the disease itself has disappeared.

3. That they are due to some other poison that acts conjointly, or in association, with that of the disease, but may act on those who have not had the disease.

To each of the above views I shall have occasion to refer, from time to time, as the cases are recorded.

The first case to be mentioned is one where the paralysis affected the muscles supplied by the anterior tibial nerve. It began four weeks after complete recovery from the measles; and advanced until the tibialis anticus, the extensor longus digitoreum, the peroneus tertius and the extensor proprius pollicis were almost completely atrophied. There was extreme reaction of degeneration. In six months from the onset of the paralysis there was a fair amount of recovery. The calf muscles, however, did not find sufficient opposition, and underwent some contraction, which was relieved by cutting the tendo Achilles.

This case would seem to point clearly to view No. two, as the correct explanation. We could hardly suppose any of the real materies morbi of the disease still existing within the system four weeks after the disease itself had disappeared, and desquamation had been completed; and, at a date when no one would regard the person as still carrying any contagion. If this person had reached the time at which we would suppose that there were no longer any of the germs of the measles in her system, before the paralysis began, it is only fair to suppose that the

paralysis was due to some agency or poison that was left in the system by the measles. Under any circumstances the third view, I think, cannot be maintained.

A second case of very great interest occurred in a patient of mine after an attack of typhoid fever. The attack of typhoid fever was of an ordinary character, and presented no special features. It was, if anything, on the mild side. The patient made a good recovery, and went home to the country to recuperate. His health and strength were returning in a very encouraging manner. One day he went out, when it was wet and cold. This was fully six weeks after he had left the city for his home. After the exposure above mentioned, paralysis began to develop, which rapidly assumed the form of a polyneuritis. In addition to the usual features of multiple neuritis, there came on those of bulbar paralysis. This, along with the neuritis, steadily became more and more aggravated. About a month prior to death there was considerable dementia. The whole duration of the paralysis was, almost to a day, six months.

It would be difficult to maintain the first view of these cases; and still more difficult to uphold the third. One of two solutions may be offered to explain this case. The first, that the typhoid fever had weakened the nervous tissue and the exposure to the wet and cold upset their nutrition, and started the chain of pathological processes that ended in the patient's death. The other explanation is that there was in the system some poison; and the cold and wet either intensified its action or suddenly arrested its elimination. This, I think, is more likely the correct opinion; and would therefore fall under the second view of these paralyses after acute specific diseases; namely, that they are due to some poison in the system, which, after the disease itself has disappeared, continues to act.

The third case I shall record was that of a young married woman. She had a very severe attack of diphtheria, with very abundant formation of membrane. She recovered, and was well enough to call at my office on August 11, then feeling well, but looking rather pale and anæmic. I was sent for to see her on October 1, when I learned that she was complaining of numbness and weakness in the hands. She had been out two days prior to this, and had gotten wet and fatigued. Up to this date there had been no paralysis. The paralysis rapidly extended, involving all four extremities, the muscles of respiration, and finally the diaphragm failed. The patient died on the twelfth day of this illness. Now it would be rather difficult to say that this was a case of paralysis due to the direct effects of the virus of diphtheria. While this is so, it would be, I think, impossible to exclude the causal relationship between the diphtheria and the paralysis. The fact seems to be correctly expressed in the second proposition, that there was left in the system some poison, other than the actual virus of the disease, which did the mischief on the nervous tissue. It is worth noting that in this case, as in the typhoid fever one, there is the history of wet and cold. This may be a mere coincidence, however, or it may show that it had something to do in the way of increasing the activity of the poison, or shaking a weak nervous system. In this case there was seven full weeks from the date on which the patient was able to call at my office after recovery from the diphtheria, and the commencement of the paralysis. This is a sufficiently lengthy period to probably exclude the direct action of the specific poison of the disease.

A fourth case of paralysis following acute febrile diseases, is also an example of the diphtheritic form. The patient, at the time of the attack, was 60 years of age. She contracted the disease while attending her niece. The attack was a severe one, and was marked by a very abundant formation of membrane, and much asthenia. The membrane had not fully disappeared from the fauces when there began distinct facial paralysis, with tingling in the lips and tip of the tongue. In two days there was much difficulty in swallowing, from paralysis in the pharynx. Concurrently with these symptoms, there were paræsthesia and loss of power in both hands and feet. The facial paralysis lasted three weeks, and the pharyngeal only one week. She could always swallow pulpy food, but with great difficulty. The heart and respiration remained unimpaired. The paralysis in the four extremities steadily increased. There was constant tingling of a very distressing character. The muscles were extremely tender to pressure, and the bed clothing had to be supported. The paralysis and anæsthesia extended until the muscles and integument of the back and abdomen, as far up as the umbilicus, became seriously involved.

In this case the nerve disturbances commenced during the actual existence of the diphtheria, and it is only fair to conclude that they were due to the direct action of the poison of the disease, rather than to the action of some other poison left in the system. Indeed, the second and third views are practically excluded. This patient ultimately made a good recovery, being able to walk pretty well in eight months from the beginning of her illness. There were marked muscular atrophy, loss of reflexes, and reaction of degeneration.

The fifth case was that of a boy, aged 17 years, who died on the eighteenth day of an attack of diphtheria. As the membrane began to wear away, the fauces and pharynx began to fail in power. The pupils became widely dilated and stationary. The respiration and heart were much lowered in strength. The pulse was frequently reduced to 30 and 32 beats per minute. After giving a stimulating enema, the beats would increase, and sometimes become as frequent as 80 per minute. He died of cardiac failure, purely of a paralytic type. This case, I think, would fall under the first condition, namely: that the paralysis was the direct result of the poison of the diphtheria.

My sixth case, one of typhoid fever, comes in this class also. The patient, a young man, had an ordinary attack of the above disease. During the period of defervescence, but before the temperature had on any occasion reached the normal level, he complained of paræsthesia in the hands and feet. Along with this there was motor loss. The polyneuritis increased, and covered a period of seven months before the patient was out of bed. This case would seem to be one where the paralysis was due to the true poison of the fever, and not to some other poison; for the paralysis came on while the fever was still in existence. It could not well be regarded as due to any form of associated poison.

The seventh case of paralysis in this list, followed an attack of la grippe; or rather occurred during the attack. The patient, a healthy young man and a student, was taken ill with influenza during its preva-

lence in 1890. He made light of the attack for the first few days, and only gave the matter attention when, in attempting to walk, he found his power of locomotion almost gone. On visiting him, I found considerable paresis. He had not then been ill altogether one week. There was tingling in hands and feet. The muscles, particularly those of the calf, were tender to pressure. The knee reflex was much weakened, but the plantar and cremaster reflexes were still normal. The paresis increased until he could not raise himself on his elbows, nor turn in bed. The sensation of the hands and feet was impaired, and the knee-jerk became almost lost on the left side, and entirely so on the right. The bowels were constipated. The respiration was slow, and the heart, for over a week, ranged from 30 to 40 beats per minute. It then gradually improved. For several weeks the intellect was very slow. Thought was torpid, the patient requiring considerable time to collect his thoughts in responding to a question. The patient was able to walk in eight weeks; but it required as many months before all pseudo-ataxic movements had disappeared in walking. In this case the paralysis was the first symptom of sufficient note to attract the patient's attention. Indeed, the nerve symptoms began at once with the prime disease, and were no doubt due to the influence of the same virus as that of the influenza.

The eighth case was one following close upon an attack of influenza, and occurred during the epidemic of 1890. The young man had an attack of this disease. In a week, or ten days at most, after he got about again, the paralysis began. In the early part of September of the same year, he was brought to my office by his brother, who was a medical student, and a member of my class. I learned from the patient that his paralysis, both sensory and motor, was thought to be due to some trouble in the medulla oblongata, and that the back of his neck had been severely blistered, and had had a seton inserted into it. It was a case of undoubted multiple neuritis. The paralysis, coming on as it did in a week or ten days after the influenza, is pretty strong grounds for supposing that it was the result of the materies morbi of la grippe, and not that of some other accompanying or following toxic agent. In other words, that it was a case that harmonized better with the first view than with either the second or the third.

In the *Gaz. Hebdom.*, Nos. 20 and 21, 1881, M. Boissarie describes a series of cases where there was paralysis in persons who had not had diphtheria, during an outbreak of the disease. His opinion was that there was some associated poison that accompanied diphtheria, and caused paralysis even though the paralyzed person had not had an attack of diphtheria. In other words, that diphtheria patients may communicate to others some infection that gives rise to paralysis and albuminuria, and not to the sore throat, or formation of membrane. On this extremely interesting question I shall make some remarks, and record a few cases.

The ninth case was that of a girl aged 18 or 19 years. She was living in a family where there were three very well marked cases of diphtheria. She had no symptoms of the disease; never had the least sore throat. On visiting the house one day, she complained of not seeing well. I examined the eyes and tested the sight. There was distinct cycloplegia. Vision for near and small objects was much impaired. There was albumin in the urine in small amounts. No other paralysis ever appeared, and vision was again normal by the end of nine weeks. All the reflexes were natural. Now this case of paralysis had all the appearance of one following diphtheria. Are we justified in saying that this young woman did not have an attack of it? I do not think that we are. To my mind, diphtheria is a constitutional disease, and not merely one of the throat. We may meet with cases of scarlet fever without a rash; and in like manner with cases of diphtheria without sore throat. Diseases do not always follow a fixed and absolute clinical formula. Here we have most likely an example of the disease in a masked form. The specific poison had entered the system, and produced albuminuria, and some local paralysis. It is quite reasonable to suppose that this girl could have communicated diphtheria to others, as well as another case where there was distinct angina. In the case of scarlet fever without the rash this is the case; and from such an example other cases may spring where the rash is abundant.

Tenth case in a boy of 13 years. His sister, two years younger, had a sharp attack of diphtheria. On the twenty-third day after I had made my last visit to the sister, the brother called at my office. He had then decided paresis, with tingling and numbness in his hands. The pupils were dilated and accommodation deficient. The closest questioning failed to reveal the least history of diphtheritic sore throat. Here was the paralysis, however, and the certain knowledge of exposure to the sister's case rendered the presumption convincing that the brother also had suffered from an attack of the same disease. The sister had diphtheria in unmistakable form, without after paralysis. The brother had the disease in disguised form, and unnoticed; while he suffered from the post-paralysis. This case falls in the group described by M. Boissarie, and comes, as well as the ninth case, under the third view of these cases, as advocated by some authors.

My eleventh case was a typical instance of Bell's paralysis. The patient, a girl 15 years of age, was at home, at the time that her little half-brother died of diphtheria. She had no sore throat, and any constitutional symptoms she might have had, were so slight that they attracted no notice. Shortly after the death of the half-brother I saw her, and found the left side of the face paralyzed. The examination of the urine yielded 4 per cent. of albumin. I would regard this as a case of diphtheria with some of the symptoms concealed.

The twelfth case of paralysis I mention is also one with diphtheritic associations. There were altogether five cases of diphtheria in the family. The eldest of these is the one given in this article as case five. Of the other two who died, one was a nursing child, and the membrane extended into the larynx; the other died of bronchitis due largely to measles in the house at the time, and which the patient had when she became diphtheritic. The two remaining ones with the diphtheria made good recoveries, and never exhibited after neural symptoms. One of the children, an active little boy, who had entirely escaped the diphtheria and measles, as was thought, shortly afterwards developed alarming paralysis, which kept him in bed for a little over a month. The four extremities were involved, both sensory and motor. There was no paralysis or anæsthesia of the palate or pharynx. The heart remained free; but the muscles of respiration were partially paralyzed.

I need not offer any comments on this case. It comes within the group described by Boissarie, as occurring at the time when diphtheria was prevalent, but in persons who did not have the disease, only suffering from some associated poison. My own opinion is that this boy had a genuine attack of the disease. Diseases do not breed true in all their clinical features. It is in this way that we can explain those cases of Boissarie where the paralysis came on first, and the sore throat later in the illness. The poison acted most promptly and intensely on the nervous system, causing paralysis at once, and as the only symptom in some cases; and sore throat later on in addition, in other cases.

My thirteenth case has some features about it that demand very careful consideration. A house in which I had four cases of diphtheria, namely: husband, wife, adopted daughter and wife's sister, was regarded as in an extremely unsanitary condition. The cellar was damp and musty, and contained a good deal of old earth and organic matter. The above persons moved away. This was in June. In the end of August another family moved into the house. No sanitary improvements had been made. On September 13 I was asked to visit the house, when I found the patient, female aged 11 years, suffering from symptoms of paralysis. The legs mainly were implicated. The knee-jerk was reduced. There were sensory as well as motor symptoms. No history whatever of sore throat or previous exposure to diphtheria. The child developed the paralysis rapidly on entering the premises where diphtheria had been known to exist. The explanation of this case might be the bad condition of the house, or that the diphtheria contagion still infected the place. They were ordered to leave the house at once. The patient gradually got well, but never exhibited any further symptoms of diphtheria. There was a small amount of albumin in the urine.

From the above cases I would conclude as follows:

1. That paralysis following acute contagious diseases is not due to some associated poison, as held by Boissarie.

2. That some of the cases of paralysis are due to the direct action of the specific poison of the disease.

3. That some cases of paralysis come on at a date when we can no longer believe that the specific poison of the disease is in activity. These cases may be due to: *a*, some poison or impurity left in the system; or to, *b*, some weakened and unstable state of the nervous tissue, caused by the disease, and which cold, wet or fatigue readily overthrows. In this way a paralysis results, as might have been the case, after such exposure, even though there had been no previous illness: but with greater readiness in those recently recovered from some acute attack, as typhoid fever or diphtheria.

THE second annual session of the Association of Military Surgeons of the National Guard of the United States will be held at St. Louis, April 19, 20, and 21, 1892. An interesting programme of addresses by prominent surgeons of the National Guard and the United States Army has been arranged, and a goodly number of scientific papers on Military and Accidental Surgery will be read and discussed, and all matters pertaining to the health, usefulness and welfare of the civilian soldiers will receive attention.

THE USE OF THE TURKISH BATH IN INEBRIETY.

Read before the American Association for the Study and Cure of Inebriety, New York, April 15, 1890.

BY CHAS. H. SHEPARD, M.D.,
OF BROOKLYN, N. Y.

The etiology and philosophy of inebriety have been presented very thoroughly in previous papers read before this Association, and I am now accorded the privilege of bringing to your notice a new method of treatment for that condition.

It is with pleasure that we note many of the former theories held on this subject giving place to more modern ideas. Common opinion considered inebriety a vice, needing only moral treatment, while to-day it is demonstrated to be a disease, and the world is waiting to honor him who first discovers its microbe.

It was not until such ever-to-be-honored men as Dr. Turner, Dr. Parrish, Dr. Mason, and a few others, made plain to the community the true standing of the inebriate, and showed that this disease was one to be treated on the same general principles as other diseases, that a right appreciation of such cases was obtained. These men have passed on, but their work remains, and future generations will call them blessed.

Dr. J. Edward Turner's name heads the list of consecrated workers in this field, as he built the first inebriate asylum in this or any other country. The corner stone, after an unparalleled amount of work on his part, was laid in 1858, at Binghamton, N. Y., and the institution, which was opened for patients in 1863, was carried on under his administration for three years with great success. Many who were his patients then have since been useful and honored members of society. The history of that institution after he left it, shows how the most beneficent enterprise may be wrecked by bad management.

A prominent feature in Dr. Turner's plan of treatment made it necessary to isolate the patient from the possibility of obtaining alcohol in any form, and to continue this exclusion long enough to make a complete cure, the time varying in different cases according to the condition of the patient. It has been demonstrated over and over again, that unless entire exclusion can be obtained, the work of reform requires repetition. There are many reasons why an institution is essential for the care of inebriety as well as of disease in general. The appliances for treatment are more complete than can be possible in the individual home, the supervision of the physician is direct and constant, and therefore the attention is more prompt, the surroundings of the patient as to sanitation, diet, etc., can be better regulated, and the uniformity of life, as well as treatment, all conduce to a speedy recovery. When we have attained exclusion, the first step toward a radical cure is taken. Without this any institution purporting to treat such conditions is incompetent in many cases.

Next in order comes the restoration of the functions of the body to their normal working condition. It is understood that the action of alcohol, as well as the narcotics, retards the waste of tissue, and some have imagined this to be an advantage, but on the contrary the system, by the free use of these agents, is often loaded, as it were, to the brim, and then is ready to be discharged like a cannon at the touch of a match, and for this very reason they are more dan-

gerous. Notice how many of those who make a free use of them are suddenly stricken down, while apparently in what should be the vigor of life.

The action of the so-called stimulants, as well as narcotics, is in reality, a toxic effect, mistakenly supposed to be stimulation, and, like other poisons,—the system refuses them, as they are non-assimilable, and therefore the easiest method, by what may be called vital reaction, is taken to get rid of them. When from excess or weakness this result cannot be accomplished, what may be called a benumbing effect is produced. The longer alcohol remain in the system, the more this effect will be perceived, and this being in the nature of paralysis, must naturally act in a progressive ratio, till the impairment of the functions of the organs is succeeded by an inability to work at all. How would it be possible to go on day after day bathing the internal organs with dilute alcohol without its inducing some kind of disease? The elimination from the body of this substance, with its irritating compounds, necessarily falls largely upon the kidneys and skin, and when these are overworked, disturbance quickly follows. Whenever elimination is suspended, insomuch is one or more of the organs engorged. This is particularly disastrous so far as the brain is concerned, for then proper coördination is interfered with and we see the gradual approach toward insanity or idiocy, the trembling nerves, and finally utter incompetency. By no means should the sufferer from such a disease be left to exercise his own judgment.

The more frequent practice is to introduce a drug into the stomach, in hopes that its action will be such as to correct the dominating morbid condition. Necessarily this drug or potion must be absorbed, pass into the circulation, and then produce its effect. Can an agent be found that will not cut both ways, like a two edged sword?

Of late much has been said and written about the chloride of gold treatment, and its wonderful success in the west. If an antidote has been found all will rejoice. But the laws of life and health must be strictly obeyed in spite of any so-called remedy, and we may rest assured that these laws are as inflexible to-day as is the law of gravitation. The time will never come when we may ignore any one of them without paying the penalty. It will ever be found necessary to pay strict attention to all the laws of sanitation, nor can we reach the highest standard of health till they are fully understood and obeyed. To go on in the way of transgression and then expect to be bailed out by some new remedy is likely to prove as futile in the future as it has been in the past.

Permit me to mention one agency that accomplishes many of the results that different drugs are given to produce, and this without the reactive effect of the drugs; an agency that never fails in time of need; that requires not to be administered by the stomach or in any unpleasant way; that is always ready, and always agreeable to the patient, and more than that, is always delightful, soothing, and quieting to the irritated nerves. That agency is,—the hot air or Turkish bath.

The moment the bather enters the heated chamber of this bath he is called upon in the gentlest manner to discharge through the skin the refuse of his system. The process of unloading goes on constantly, and the longer he remains in the heat, the more foul material is thrown out. The skin is made active, the blood is perfected in its circulation; at the same time the elements of disease are discarded. Thus when there is alcohol in the system, it can be distinctly noticed in the perspiration. It is apparent to the sense of smell when alcohol is used even in a limited degree, and much more so when it is freely used. As the blood is brought to the surface and purified, it goes back to every organ to do better work and perfect every function, by carrying new elements of repair and nutrition, by which all the activities of life are renewed, so that, unless the work of destruction has been carried on too long, repair is set up and a better condition of things organized. For instance, if the kidneys have been inflamed, the inflammatory and obstructive particles are withdrawn, the former irritation is quieted, there is less determination of blood and nervous energy to that part, through the general equalization, so that a normal action follows, and this vivifying process goes on, not alone with the kidneys, but with every organ of the body to which the vital fluid reaches. Then again, the manipulation which accompanies this treatment, renders more perfect every process, and in a large measure takes the place of exercise. Nothing could be more simple and perfect in its action. The effect is constitutional or general, and thus quickly overcomes all local obstructions, and the process needs only to be repeated and continued long enough to reach the most depraved cases.

By no means will this process restore a lost arm or a wasted lung, but many an arm that has been unfitted for service by inflammation, has been quickly restored to its full activity, and many a lung that was not doing half work, has been cleaned and restored to its normal action, and the brain that before was cloudy, has been cleared and restored to almost its pristine activity.

When we realize that the lesions of alcohol are more marked by functional diseases than by any anatomical change, it is quickly seen how important is an agency that appeals so directly to these conditions. With health restored, the craving appetite for strong drink ceases, and a relish is felt for a purer and many times more agreeable exhilaration.

With so powerful an agency as this constantly at hand, we need little else. With simple, wholesome food, moderately indulged in, and with pleasant surroundings, all the health of which a person is capable is assured.

Cleanliness and politeness are among the necessary refinements of civilized society. The practice of the Turkish bath increases both. We can have no free intercourse among the people unless these characteristics belong to them, but with these secured we have the delights of social life, especially if with them we complete the trio, by adding sobriety.

Modern science has proven alcohol to be a poison, and holds it accountable for a large part of the disease and even insanity that curse our land. Look for one moment at the immense amount of time and treasure that is expended for stimulants alone; it is said to be sixty million pounds a year in Great Britain. Count Tolstoi makes the remarkable statement, that one-eigthth of the entire population of that country devote their lives to the manufacture of stupefying stimulants. Deliverance from this terrible custom that dominates so large a part of the world, will mark an epoch in the life of the race. Admitting that present relief is furnished to pain and anxiety by the

use of stimulants, this at best is transient, and the price paid is too great. The coming physician will take higher ground, correct the patients' habits, read the signs of the nervous and mental constitution, as well as the heredity, and teach how to keep well, rather than to relieve mere temporary ills. Pain is one of our best friends, and may be compared to the watchman on the tower, warning us of the approach of the enemy. It would be the height of absurdity to shoot the watchman instead of heeding his warning.

The rush and push of the age, and the struggle for existence, are accountable for much of the use of stimulants, and for the failures in life and health that are continually before us. When one falls by the way, he thinks to recover himself by stimulation, rather than by rest and recreation, which would take time. He little realizes that the use of stimulants is only to draw on whatever vitality he may have left, that they never increase this force. Even medical men are sometimes deluded by the idea that they can tone up the patient and thus tide him over an emergency, losing sight of the fact that when the emergency is passed there is so much less vitality with which to react. Weakness can hardly be called a malady, though it may often be a symptom of a grave disease. The popularity of tonics and the importunity of patients will doubtless often tempt the practitioner, but he who regards the highest welfare of his patient will not thus be carried away, but rather inquire into the cause of the weakness, and show that by correcting the habits of the individual, the most fruitful source of weakness may be avoided.

There can be no immunity for the transgression of the laws of health. To study and obey them is incumbent on all alike. If the effect of transgressing these laws could easily be nullified by a tonic or stimulant, there would soon be no law.

A real tonic is food that can be appropriated to the purposes of the system, not that which is taken in excess, a burden to the organism, and therefore to be disposed of in the easiest manner possible. Another tonic is pure air, which furnishes oxygen to the skin and lungs, and thus vitalizes the circulation by burning up the débris and preparing the used up tissue to be cast off in the shape of watery vapor, carbonic acid gas, and salines.

The popular practice of using tonic drinks, as remedies to increase the appetite, is misleading, for it is not the amount of food that goes through the first stage of digestion that builds up the system, but rather that which is taken up and appropriated to the various uses of the body, an office that neither tonics, stimulants, nor narcotics are able in any manner to fill. Many a time has the health been utterly ruined by the false idea that in taking tonics the system was being nourished, perchance increasing in weight, while the disease itself was slowly but surely gaining ground. In all this use of stimulants, tonics and narcotics, it is the effect on the nervous system that is sought. There is too much willingness to live in the sensational and emotional, rather than to be subject to the will and common sense. The use of artificial tonic drinks is but little removed from that of alcoholic tipples.

Some time since, a course of experiments was entered upon to determine the value of various preparations of pepsin. These experiments included the addition of different drugs and mixtures of drugs under strict test conditions, and prove conclusively, that in every instance of such additions, the digestive process was retarded, and the delay was in proportion to the amount of the drug added. Those drugs which had the greatest tonic reputation, and of which iron was a component, produced the greatest delay of the digestive process.

It is only by nutrition that real vital force can be secured, and this must come through absorption into the circulating fluid of such portions of the food as are properly prepared for it. Motion calls for expenditure of vital energy in disposing of such products. Their use and disposal are the one grand necessity, and any thing that promotes this end is a real tonic.

Artificial heat is shown to fulfil this condition with less expenditure of vitality than any other agent. By inviting the circulation to the surface, it quickly disposes of all refuse and makes room for a new supply.

This effect is peculiarly happy in all cases of weakness, whether local or general, inasmuch as it is undergone in a passive state, and therefore calls for the minimum expenditure of vitality. This is why one feels so refreshed and rejuvenated after the Turkish bath. It is well known that whatever tends to build up and strengthen the muscular system, or invigorate the body generally, has at the same time a renewing and strengthening effect upon the whole nervous system, of which the brain is the head centre, and naturally receives the larger share of the benefit. This has been well shown in many cases of insanity, where the Turkish bath has wrought wonderful instances of relief.

Cases of acute inflammation and pain, attended with extreme debility, have enjoyed the bath twice daily for varying periods of between three and six months with the result of quickly relieving both pain and inflammation, and with a gradual improvement in health, strength and weight; some cases increasing between ten and twenty pounds while under the treatment.

When the inebriate can be kindly taken from society, of which he is unable to fulfil the duties, and be cared for till he is again fitted for its privileges; when the younger generation are taught the disastrous effects of the use of stimulants or narcotics in any form; and when the Turkish bath forms a necessary adjunct to every habitable institution, and is made generally accessible to the people, a brighter day for mankind will dawn upon the world.

A REPORT OF TWO CASES OF NEPHRECTOMY, SARCOMA AND PYONEPHROSIS.

Read before the Kings County Medical Association, December 8, 1891.

BY J. D. SULLIVAN, M.D.,
OF BROOKLYN, N. Y.

The two cases herein reported present many points of special interest, and it is hoped that their consideration will afford some additional knowledge relating to surgical diseases of the kidney.

Case 1.—Miss K. D., aged 17 years, nativity New York, called at my office on April 7, 1890, to seek relief from pain in her back and right lumbar region, and a variety of symptoms pertaining to her nervous system. On careful inquiry, I elicited the following history: Father, brothers and sisters are in the enjoyment of good health. Mother died recently from

kidney disease accompanied with dropsy. No other hereditary taint.

Patient has had irritable bladder since childhood. In February, 1889, she began to have pain in her back and right lumbar region, and frequent headaches. Soon after she began to have fainting spells, which would last from half an hour to two hours, with various nervous phenomena of a hysterical character. During the summer and fall of 1889 she was under the care, at different times, of two eminent neurologists, who evidently treated her for hysteria, although one of them expressed the opinion that there was some obscure morbid condition in the case. During the winter of 1889 and 1890, she applied to several other physicians for relief, but up to this time treatment of any kind had been of no avail, and she continued to grow worse in every respect.

She now complained of constant headache, pain in her back and right side, loss of appetite, with nausea and frequent attacks of vomiting. Micturition was painful and irregular, sometimes frequent, at other times at long intervals, even to only once in twenty-four hours. Her aunt, who accompanied her, stated that her sleep was very much disturbed, she was subject to frequent attacks of fever at irregular intervals, and that her nervous system had become very sensitive, and a moderate degree of excitement of any kind would bring on a fainting spell which continued for one or two hours at a time. These fainting spells were of almost daily occurrence.

The above symptoms embrace all the material points in the history of the patient. The urine was analyzed and found to contain considerable pus. Specific gravity was 1012. An examination of the bladder for stone or any abnormal growth proved negative. In the right lumbar region, and extending forward, I discovered a well marked fulness and hardness which was painful on pressure. My diagnosis was that we had a case of surgical kidney to deal with. Stating that the case would probably demand operation, I simply prescribed for the improvement of her general health, and determined to watch its progress for awhile, and if possible to learn something more definite in regard to its character. During the following week I saw her three times, and although she had many hysterical symptoms, I became fully satisfied that her sufferings were genuine, and that her condition was becoming more serious. Her pulse was soft, weak and varying, averaging about 120. Her temperature ranged from 99° to 102°. The quantity of urine varied from 12 to 30 ozs. in twenty-four hours, some days containing an ounce of pus, other days less than a drachm. Specific gravity ranged from 1008 to 1012. It was quite evident that her general health was rapidly failing, and the prognosis was decidedly grave. On April 14, Prof. J. D. Rushmore was called in consultation, and agreeing with my diagnosis, he advised an exploratory incision in the right lumbar region for the purpose of examining the diseased kidney, and the subsequent action to be determined by the character of the disease.

This was reluctantly consented to by the father and relatives, and two days later the patient was placed under the influence of ether, and the field of operation thoroughly cleansed. Dr. Rushmore made what is known as the "Czerny" incision; that is, an incision from just below the last rib, over the outer border of the quadratus lumborum, to a point just above the crest of the ilium, and supplemented by a transverse incision carried anteriorly. On reaching the kidney, this organ was found to be considerably enlarged and quite firm. A hypodermic needle was inserted into its substance, and after puncturing it in two or three places, pus was withdrawn into the syringe.

After careful deliberation, it was decided that nephrectomy was the proper course to pursue. The kidney having been well exposed, the ureter and renal vessels were ligated with strong silk ligatures, and the organ removed.

The hæmorrhage, which was but slight, was arrested by packing the wound with pads of cloth wrung out in hot water. A drainage tube was inserted, the wound closed with silk sutures, and the usual dressings applied.

The operation was well borne by the patient, and she rested well the following night. The next day her temperature was but a little above normal, and she appeared brighter and more comfortable than before the operation. The quantity of urine voided in the next twenty-four hours was 26 ozs., and contained but little pus.

The wound was healing nicely and all symptoms were favorable until the third day after the operation, when the daily secretion of urine diminished to 12 ozs., nausea and vomiting came on, and she complained of most distressing headache. On the fourth day diarrhœa supervened, and the irritability of her stomach became so great that all kinds of liquids were immediately rejected.

Her temperature ranged from 100° to 102°, and her pulse about 120 and feeble. Dr. Rushmore saw her again on the fifth day, and concurred with me in the opinion that her unfavorable symptoms were due to uræmia from incompetency of the remaining kidney. Various remedies were suggested and applied, but on the sixth day the uræmic symptoms were more marked, vomiting continued, and her bowels moved involuntarily. For hours at a time she would lie in a semi-comatose condition, with irregular twitchings of the muscles and limbs, and then awake and complain bitterly of the severe pain in her head and left side. I now determined to withdraw all kinds of food from the stomach, and endeavor to sustain her with nourishment applied to the skin. An emulsion of equal parts of cream and cod-liver oil was liberally rubbed all over the body and limbs every two or three hours, and a comfortable covering of flannel applied. One gr. doses of calomel were given morning and evening, with the hope of producing a beneficial effect on the kidney. Only small quantities of whey and barley water were given by the stomach. For three days she remained about in the same condition, and then began to show decided indications of improvement. The daily quantity of urine gradually increased, her intellect became brighter, the muscular twitchings ceased, and her stomach became more tolerant to fluids. Within the following week she was able to retain a fair supply of peptonized milk, and by the middle of May her digestion was fairly good, and the daily quantity of urine increased to 36 ozs. The nephrectomy wound apparently closed by primary union, and the sutures were removed on the fifth day, but during the second week, when her vitality was so low, the bond of union gradually broke down, and it was subsequently dressed openly with loose packing. As her general condition began to improve the wound began to granulate, and continued in a healthy condition until it was completely closed, June 1.

During the granulating process the ligatures, which had been placed on the renal vessels, came away.

About the middle of June she began to go out, and on July 1 she came to my office, apparently in the enjoyment of very good health. It is worthy of note that all through her convalescence she complained of pain in the region of the left kidney, which she described as being similar to that which she had in her right kidney a year before. This pain, however, was more severe within the first month after the operation, and gradually became less as time passed on and her condition improved.

She continued to have occasional attacks of hysteria, and it was during those attacks that she complained mostly of the pain. It is now one year and eight months since the nephrectomy was done, and up to the present time there has been no positive evidence of disease in the other kidney. The daily quantity of urine averages about 40 ozs., and it is normal in every respect. Through the kindness of Dr. J. M. Van Cott, Jr., Pathologist and Curator to the L. I. College Hospital, I am enabled to give the following results of the microscopical examination of the diseased kidney. Addressing Dr. Rushmore, he writes: "Careful examination of the kidney removed by you a few days since, reveals it to be the site of a well-marked, typical, small round and spindle cell sarcoma, which has invaded the greater portion of the entire organ. The upper part of this wedge-shaped mass is necrotic, a fairly large and deep ulcer being seen just over the centre of the growth. With regard to the prognosis in this case, it is to be remarked that, on general principles, small round and spindle-celled sarcoma belong to the most malignant of neoplasms, but it is equally certain that such a tumor, thoroughly encapsulated, will not display the tendency to recurrence it is sure to if not encapsulated. Now as the renal capsule appeared to be intact, I am of opinion that the chance of recurrence is much lessened, and unless recurrence is rapid, I believe you have saved your patient."

The history of the case thus far is in accordance with Dr. Van Cott's report, and prognosis.

Case 2.—Rev. J. D. R., aged 38 years, native of Holland. Mother, one brother and one sister died of consumption. Says that he must have had some congenital malformation in his right side, for during his early boyhood, his parents cautioned him to refrain from active sports, such as jumping, skating, swimming, etc., for they said he was in danger of having a rupture on that side. From 12 to 19 years of age he occasionally had attacks of pain in the right side of the abdomen, just below the free border of his ribs. At the age of 23 years, the attacks of pain became very severe. Several physicians in England and in different parts of the European Continent were consulted, but they differed in the diagnosis of the case. In July, 1876, he was, on the advice of one of his physicians, sent to Carlsbad for treatment of disease of the liver. After drinking large quantities of the mineral waters of that place, the attacks of pain came on more frequently and with greater severity, and were only relieved by pressure on the right side, followed by a free discharge of urine.

While in Carlsbad, he had the privilege of consulting Prof. Weber, Jr., a member of the faculty of the University of Leipsic. Prof. Weber pronounced his trouble to be due to a floating kidney, and advised him to discontinue the use of mineral waters and medicines, and simply endeavor to improve his general health and accumulate flesh. He followed this advice, and from 24 to 36 years of age he enjoyed good health, with the exception of occasional attacks of pain in his right side. He, however, had learned to control those attacks by lying on his abdomen and pressing some hard substance, such as a bottle or his closed fists, against a swelling which came on with the attacks.

After continuing the pressure in this position for about ten minutes the swelling and pain would subside with a desire to urinate. Each attack of this kind was followed by the passage of an unusually large quantity of urine which, however, was normal in every other respect.

In December, 1890, the attack became more frequent, more violent and of longer duration, and he began to feel a pain in the region of the left kidney.

This alarmed him more than any of his former experiences. About June 1st, of this year, he consulted an eminent surgeon of Philadelphia, who confirmed the diagnosis of floating kidney and advised him to have it anchored. The operation was done in one of the hospitals of that city on June 13th. The wound was closed and healed by primary union.

He was confined to his bed for a period of six weeks after the operation. When but a few days up he noticed a swelling in the right side of his abdomen and he passed some blood with his urine. The surgeons in charge considered the swelling due to impaction in the large intestine and purged him freely. He was advised to go to the sea-side for the purpose of improving his general health. About the middle of last August he went to Coney Island, whence he came under my care. I first saw him about August 20th, of this year, when I obtained the chief points in the foregoing history.

He then presented a sombre expression of countenance with a sallow and muddy skin, such as is generally caused by septic influences. His pulse was about 120 and weak. Temperature 101°. He stated that he had lost about thirty pounds of flesh since the operation in Philadelphia.

An examination of his abdomen revealed the presence of a well marked swelling on the right side, the limits of which could be easily defined and which occupied the space from the free border of the ribs to near the crest of the ilium and from the lumbar muscles nearly to the umbilicus. It was dull or flat on percussion, and on careful palpation fluctuation was quite perceptible. Two samples of his urine, taken at different times, were examined, one of which was quite normal, the other containing considerable pus. My diagnosis was that he had either a pyonephrosis or a pyo-hydronephrosis, and that the tumor was the distended pelvis of the kidney. I advised the introduction of an aspirating needle to determine its true character, but at that time he positively declined to allow any further surgical procedure. A few days later, however, he realized that there was no other hope of saving his life and he consented to enter St. Mary's Hospital, and put himself under my care. On August 25th, with the approval and coöperation of Dr. Geo. R. Fowler, I introduced through the loin a trocar and canula attached to an aspirator and drew off about a quart of pus. We then decided that either a nephrotomy or a nephrectomy was evidently demanded. On August 27th, assisted by the house-staff,

Drs. E. A. Parker, James McEvitt, D. M. Downey, and D. P. O'Hanlon, the patient was etherized, and with the usual antiseptic precautions I made the "Czerny" lumbar incision and through it obtained a good view of the kidney. Fluctuation was easily detected on its convex border. In fact it was demonstrated that its cortical portion was only the posterior wall of a large sac formed by the distended pelvis. The kidney was firmly located in its normal position, but the enlarged pelvis extended behind the ascending colon nearly to the median line.

The sac was closely adherent to the colon and other surrounding structures. I then decided to extirpate the kidney without opening the sac. By careful dissection with the tips of my fingers and the handle of the scalpel and a very little cutting, I succeeded in separating the adhesions from the colon and peritoneum. The kidney was so firmly fixed in its position that portions of its capsule were left *in situ*. The ureter and renal vessels were ligated with silk ligatures and when they were severed I discovered that another set of renal vessels entering the upper portion of the pelvis still held the organ in position.

The second renal artery and vein were also ligated separately and the mass removed. The small amount of hæmorrhage was soon arrested by the application of pads of sterilized gauze wrung out of hot water. Two drainage tubes were inserted and the wound closed with silk ligatures and dressed with sterilized gauze. On being put to bed the patient was given an enema of one ounce of whisky with half an ounce of beef peptonoids, and for the next twelve hours received nothing but a teaspoonful of hot water every half hour, which was then increased to a tablespoonful at the same interval. During the second day his diet was restricted to whey, of which he drank, on an average, an ounce and one half every hour. For the next week he was allowed peptonized milk and Vichy water, and was then put upon a light general diet, excluding meats.

For several days before the operation his temperature varied from 99° to 102½°, on the first day after it was from 100° to 101°, on the second day from 99° to 100°, and on the third day came down to 98⅘°, and varied little from the normal point during the following month. On the first day after the operation he passed 24 ounces of urine, on the second 25 ounces, and for the next two weeks the daily quantity varied from 23 to 28 ounces, after which the quantity gradually increased to 48 ounces. It is now normal in every respect. The wound healed by primary union with the exception of the space occupied by the drainage tubes. Although these tubes were removed about the end of the first week, a sinus remained for several weeks which continued to discharge more or less pus, and showed no signs of healing. I presumed that the ligatures on the renal vessels had failed to become encysted and would come away by a process of ulceration. After waiting until the end of the second month I determined to enlarge the sinus and curette the bottom of the wound. On making the incision one of the ligatures was found about half way out in the sinus, and the others lay loosely in a pocket at its inner extremity. The curette was freely applied to the suppurating surface; the wound irrigated and packed with sterilized gauze saturated with balsam of Peru. Healthy granulations soon appeared and the wound healed rapidly from the bottom. With the exception of the trifling annoyance caused by these ligatures the patient did not have an unfavorable symptom from the day of the operation to the present date. The sallowness of the skin soon gave way to a healthy color, his appetite and digestion become remarkably good and his general health was restored.

I deem it a special privilege in this case to present for your inspection this evening the sound patient and the morbid specimen. The one an educated gentleman who has considerable practical knowledge of the vagaries of a floating kidney, and now fully appreciates the merits of modern surgery; the other of scientific interest as a pathological specimen of an anatomically abnormal organ. In regard to the points of special interest in this case we may inquire first: Did the second set of renal vessels which entered the upper portion of the pelvis have any etiological relation to the displacement of the kidney? I am inclined to answer in the affirmative, for in ligating these vessels I was obliged to pass the ligatures under the free border of the ribs toward the median line of the body, and it appears to me that they were not of sufficient length to reach to the normal position of the kidney.

Secondly. Was the peculiar position of the organ an embarrassing factor in the early diagnosis of the case? The history indicates that it was, for the patient was examined by many able physicians and surgeons before Prof. Weber, and they all failed to make a correct diagnosis. Thirdly. Was pyonephrosis caused by the operation of nephrorraphy or was it an indirect result of the fixation of the kidney? In other words, did the suppuration in the renal pelvis result directly from a septic germ introduced or developed by the operation, or was it indirectly produced by the fixed position of the ureter causing some obstruction to the exit of the urine and its consequent retention and irritation.

These are questions which I merely mention for your consideration, but am not prepared to discuss in this paper. If the suppuration was a direct result of the nephrorraphy, I am inclined to the opinion that such a consequence would be less likely to follow if the wound were left open and allowed to heal by granulation, as recommended by some surgeons who have written on this subject.

The limits of this paper will permit me merely to allude to the points of special interest in Case 1.

The difficulties encountered in its early diagnosis, the concurrent development of hysteria, the supervention of uræmia after nephrectomy, and its brief duration, the malignant character of the disease and its non-recurrence within a period of twenty months, are facts of special significance. It is notable that in both these cases the right kidney was the organ affected, whereas the left kidney has the reputation of being more liable to disease.

CLEVELAND HAS AN EPIDEMIC OF IMPETIGO CONTAGIOSA.—It prevails all over the city, and in some quarters has caused some needless, albeit natural, alarm. It is a mild, self-limited, pustular affection of the skin, and attacks adults as well as children. It shows itself in the form of large, flat, superficial crusts, chiefly on the lower part of the face and hands, and to a less degree on the covered portions of the integument.—*Cleveland Med. Gaz.*

A CASE OF GASTROSTOMY FOR IMPERMEABLE STRICTURE OF THE CARDIAC END OF THE ŒSOPHAGUS. RECOVERY. SUBSEQUENT DILATATION OF THE STRICTURE, FOLLOWED BY RETROGRADE DILATATION.

BY ARCH DIXON, M.D.,
OF HENDERSON, KY.

On July 14 of the present year, Dr. Thos. W. Taylor consulted me in regard to a patient who was unable to swallow anything save liquid. The patient, Capt. S., aged 54, weight previous to difficulty in swallowing 230 lbs., at time of examination 156 lbs. Examination by means of œsophageal bougie (smallest size) revealed the fact that complete stenosis of the œsophagus existed at the cardiac end. Repeated trials failed to pass the stricture, and the patient was informed that only an operation, the nature of which was explained to him, could prevent his death from starvation. Operation was declined. Again on July 29, the patient consulted me, and after persistent effort I failed to pass the stricture with the smallest bougie. He was requested by me to go before the Henderson County Medical Society, which held a meeting that afternoon, and be examined. To this he consented, and again the attempt was made to pass the stricture by a number of physicians present, without success. A statement of his case was made by me, and the unanimous opinion was expressed to him that only an operation could save his life. He had by this time grown much weaker, and was reduced in flesh to 140 lbs. The operation was now consented to, and on August 4, at the Home Mission Sanitarium, assisted by Drs. John Young Brown, W. M. Hanna, W. S. Stone, A. J. Lieber and T. W. Taylor, I did a gastrostomy after Hacker's method, as follows:

The patient was prepared in the usual manner, the field of operation being made as nearly aseptic as possible. Chloroform was administered by Dr. T. W. Taylor. The incision was made 4 inches long, beginning 1 inch below the ensiform cartilage, and 1½ inch to the left of the median line, the peritoneum was reached, caught up between forceps and divided the full length of the incision. The index and middle fingers were inserted, the transverse colon pushed downward and the stomach reached without difficulty, a fold of which was caught between the fingers and partially drawn through the wound, where it was held by Dr. Brown, while a careful search was made for the cardiac end, to detect, if possible, any tumor or enlargement which might be the cause of the stricture. None could be discovered. A silver pin was now passed through the fold of the stomach, which was drawn through the wound, a little above the level of the skin, care being taken that the pin pierced the mucous membrane, as suggested by Weir, thus forming a support for the stomach in the wound, and serving as a guide when the opening should be made into it, to show that the cavity was reached. The pin was about 3 inches long, and rested on the skin on either side of the wound. The peritoneal coat of the stomach was now stitched to the peritoneum by a continuous suture, which on either side included the skin. The peritoneum above and below was brought together by interrupted sutures, which embraced muscle, fascia and skin, as well. The wound was now covered with iodoform collodion, over which iodoform gauze was placed, confined by adhesive strips, the opening into the stomach being purposely deferred until adhesions should have formed. The patient recovered from the effects of the anæsthetic well. There was some pain of a darting character, which was relieved by hypodermic morphia ¼ gr., and atropia $\frac{1}{150}$. The operation was finished at 11 A.M. At 6 P.M. temp. was 99, pulse 78. August 5, temp. 98.5, pulse 72, temperature and pulse remaining normal until the morning of August 7, when the dressing was removed.

A few drops of cocaine were injected into the fold of the stomach which protruded through the wound, and the gastrostomy was completed by cutting down on the pin with a tentatome. As in Weir's case, the presence of the pin was a valuable guide in showing beyond question that the cavity of the stomach had been entered. There was no hæmorrhage of moment. The adhesions being firm, the pin was withdrawn, and the mucous membrane was drawn up and stitched to the skin. A rubber tube was now passed into the stomach through the opening, fitting it snugly. Iodoform collodion was liberally used around the tube and over the abdominal wound. Iodoform gauze folded several times, through which a hole was cut for the tube, came next, covered by a piece of rubber sheeting. Borated cotton, held in place by adhesive strips, completed the dressing. The tube was kept *in situ* by a thread passed through it above and below, and the thread held in place by adhesive strips. Peptonized milk ½ pint, with a teaspoonful of Mosquera's beef-meal, was now injected through the tube into the stomach by means of a large syringe. An ordinary spring clothes pin was used as a clamp for the tube. Six hours later another ½ pint of milk was thrown into the stomach, the patient experiencing a satisfaction which had not been experienced previously from the use of nutritive enemas. Temperature at 8 P.M. reached 101 degrees. At 10 A.M. August 8, it had again fallen to normal. The feeding was continued at intervals of six hours, the food being varied in character; chopped meat, eggs, bread, etc.,—the patient had an aversion to brandy, and would take no stimulant of any character. Improvement was steady, and in ten days the patient was out of bed, in two weeks he was walking about the house, and in three weeks he was down in the city, a distance of ½ mile from the sanitarium. No difficulty was experienced in preventing leakage by means of the rubber tube, as long as the patient remained in bed, but when on his feet much annoyance was given by it. This was controlled by soft rubber bags with tubes extending out from about 10 to 12 inches; the bags were passed into the stomach in a collapsed condition, were then inflated and drawn up firmly against the opening, the dressing was applied and a hard rubber ball perforated sufficiently to allow the passage of the rubber tube was brought down closely on the top of the dressing and held there by a clamp. On the 29th day of August, 24 days after the primary operation, and 21 days after the stomach was opened, I determined to try dilatation and was agreably surprised to find that the smallest size, olive pointed bougie entered the stomach, passing the stricture without difficulty; a size larger was now used and it passed also, without force.

The following day a large stomach tube was passed down the œsophagus and with little difficulty enter-

ed the stomach. Dilatation was continued at intervals of a few days. From liquid food the patient soon essayed some solid and on September 10 took his first square meal, which consisted of oysters, broiled beef-steak, coffee, eggs and bread. The patient eft the Sanitarium, and I was thinking seriously of closing the abdominal opening, or allowing it to close. On September 23, the patient, who made daily visits to my office, complained again of difficulty of swallowing solid food, especially was there difficulty in swallowing bread. The bougies passed the stricture easily, on entering, but on withdrawal there was a decided hitch, even the slightest bougie was caught when withdrawn. I at first attributed this to spasmodic action, but the difficulty grew greater and greater, until finally I could no longer enter the stomach by way of the œsophagus with a bougie. Liquids could still be swallowed and found their way into the stomach. I now determined to try retrograde dilatation and on September 30, assisted by Dr. John Young Brown, I succeeded in finding the cardiac end of the œsophagus and entering it with a very small bougie, a boulá. The opening was about the size of a very small size shirt button hole and felt much like the meatus urinarius in a girl; it was surrounded by a hard tissue, feeling much like fibroid. A uterine sound was now next properly bent and with the finger as a guide, passed into the œsophagus; this was followed by a uterine dilator; slight pressure on the handles opened the blades almost one-half an inch but the patient experienced so much pain that it was thought better to desist. The following day, chloroform was administered by Dr. W. S. Stone, and retrograde dilatation was accomplished, first by means of Gil Wilu's uterine dilator, the use of which enabled me to enter the orifice with a large size rectal bougie.

Up to this time I had not been able to determine whether the stricture was due to malignant trouble or not, but on passing the finger into the now dilated œsophagus, a friable irregular growth was detected, which easily broke down and bled rather freely. A piece of the growth was twisted off by forceps and was sent to Formad, in Philadelphia, for examination. Since the dilatation the patient has been able to swallow solid food without much difficulty and has notably improved in flesh and strength, and is able to attend to some business. Of course if I am right in the opinion that the trouble is malignant it is only a question of time as to how long the patient may live, but there can be no doubt of the fact that but for the operation he would have been dead and that by it his life has been indefinitely prolonged.

I wish to acknowledge my indebtedness to Dr. Robt. F. Weir, of New York, for many valuable suggestions, both in the performance of the operation and in the management of the case afterward, gleaned from his report of a similar case published in the *Medical Record* of July 25, 1891.

Henderson, Ky., Oct. 14, 1891.

The Contributions to the London Hospitals have been $350,000 less than usual during the past year. This is thought to be due partly to the charges of mismanagement, partly to the demands made on philanthropic people by General Booth.

The Plague is reported to have broken out in the Government of Kazan, in Russia, among the famine-stricken peasantry.

PNEUMONIC FEVER—ITS MORTALITY. WITH A CONSIDERATION OF SOME OF THE ELEMENTS OF PROGNOSIS.

Read before the Chicago Medical Society, December 7, 1891.

BY EDWARD F. WELLS, M.D.,
OF CHICAGO, ILL.

The death-rate of pneumonic fever varies, according to the statements of authors, from *nil* to 100 per cent. I have collected and tabulated the statistics of 223,730 cases of this disease, of which number 40,276 perished from the direct effects of the malady—a rate of 18.1 per cent. These cases have been drawn from every available source, from all parts of the world, and have been subjected to every imaginable mode of treatment. Numerous schools of medical philosophy, and eras of fashion in therapeutics, have also passed through the various stages of their existence during the period of time covered by this inquiry. Notwithstanding this, it will be noticed that the death-rate of all the larger collections of cases—with few exceptions—is nearly the same, although they were probably subjected to widely different, possibly diametrically opposite, methods of therapeusis. From this we may infer that treatment alone has exercised but little influence over the natural course of the malady, and that the results of this analysis fairly represent its normal fatality. In addition, we have an indirect mortality of about 1.3 per cent. from cases followed by dependent chronic ailments, which, added to that from the disease *per se*, raises the true mortality rate to about 19.4 per cent.

Before giving the table, we will pass in review the published opinions of a few authorities on this subject: Bennett[1] considers the mortality of uncomplicated cases, properly treated, as being practically *nil*, and this opinion is shared by Barthez,[2] Joly,[3] Palmer,[4] Paton,[5] Thomas[6] and others. Ziemssen[7] says that "according to his observation, primary croupous pneumonia in children almost always ends in recovery." Raven[8] says that it "ends satisfactorily in a large majority of instances—children scarcely ever die of it." Trousseau[9] says that "generally speaking, there is a tendency to spontaneous recovery," and similar words are used by Baginsky,[10] Flint,[11] Waters[12] and many others.[13] D'Espine,[14] Hartshorn,[15] Wood,[16] and numerous other writers,[17] consider the fatality as very light. Gerhard[18] and others[19] affirm that the death-rate in private practice should not exceed 2 or 3 per cent.

We hear much of the innocuity of simple pneumonic fever, and in the fatal cases, how frequently do we find death attributed to "complications." As a matter of fact, cases are continually finding their way in significantly large numbers to the post-mortem table, with no other lesions except those legitimately belonging to the disease, showing that the malady *is* dangerous.

Copland,[20] Drake,[21] Mann[22] and others[23] consider pneumonic fever a very fatal disease. Gross[24] says that it is one of the "most formidable maladies which the physician has to cope with, and forms one of the great sources of mortality." Loomis[25] says that "the mortality average from all the published reports to which he has had access, gives 20.1 per cent. of deaths. . . From such facts it must be admitted that a disease in which death occurs in one out of five cases, should be classed among the very

fatal diseases." Drummond[25] looks "upon pneumonia as one of the most fatal of acute diseases."

Donaldson,[26] Hart,[27] Sturges[28] and others, think that the mortality has greatly decreased in recent years, whilst Hartshorn[29] and others[30] hold the opinion that it has greatly increased. The statistics presented in the following table will show that neither of these propositions are established by the facts in the case.

TABLE I.—SHOWING DEATH RATE OF PNEUMONIC FEVER.

OBSERVER AND REFERENCE.	Cases.	Deaths	Per Cent
Acerbi, Annot. di Med. Prac., Milano, 1819, p. 94	142	16	11.2
Antonfu, Inaug. Dissert., Bucharest, 1887	142	2	1.4
Armstrong, U. S. Marine Hosp. Rpts., 1886, p. 129	36	11	30.6
Baginsky, Pneumonie u. Pleuritis, Würzb., 1880	199	40	20.6
Bamberger, Wiener med. Wochenschr., 1857, Nr. 5	60	4	6.7
Bang, Ranking's Abst., No. 28, p. 92	54	2	4.0
Banks, U. S. Marine Hosp. Rpts., 1888, p. 226	3,011	496	16.0
Bartels, Ann. d. Charité, Bd. vii, s. 234	161	21	19.4
Barthez, Bull. de l'Acad. de méd., 1862, T. xxvii, p. 676	212	2	1.0
Basel Hospt., Berichte	922	213	23.1
Bauer, Berichte med. Klin. München, 1878	109	21	19.3
Baumgärtner, Lungenentzündung, Stuttg., 1850	30	3	10.0
Becquerel, Sur l'influence des emiss. du sang, Paris, 1838	28	23	82.0
Bell, Braithwaite's Retrospect, Jan., 1859, p. 71	36	0	0.0
Bell, Ranking's Abst., No. 28, p. 92	81	4	5.0
Bennett, Lancet, 1865, Vol. I, p. 195	129	4	3.1
Berliner Charité, Annalen, 1876–7	567	116	19.8
Besnier, Quoted by Lépine, Pneumonie, Wien, 1883	2,109	759	36.0
Biermer, Quoted by Kocher, Pneumonie, Würzb., 1866	60	10	16.6
Bird, Bouchet's Dis. Chest., London, 1865, p. 330	20	0	0.0
Bleuler, Inaug. Dissert., Zürich, 1865	228	44	19.3
Borland, Boston City Hosp. Rpts., 1870	190	27	14.2
Bouillaud, Dic. de méd., Paris, 1835	173	21	12.1
Bouillaud, Quoted by Stürges, Pneumonia, p. 206	102	12	12.0
Brandes, Virchow's Archiv, Bd. xc, s. 210	142	30	21.1
Brenchley, Lancet, 1890, Vol. I, p. 1425	12	0	0.0
Briquet, Ranking's Abst., No. 28, p. 92	129	17	13.2
British Army, Lalfoche, Pneumonia, Phila., 1854, p. 417	5,685	399	7.0
Burkard, Ranking's Abst., No. 28, p. 92	120	2	1.6
Caton, Lancet, 1884, Vol. II, pp. 133-137	129	39	30.0
Chatelain, Jour. de méd. de Brux., 1870	39	20	52.0
Chomel, Pneumonie, Leipzig, 1841, S. 305	383	60	15.7
Churton, Lancet, 1890, Vol. II, p. 133	127	19	15.0
Chvostek, Œsterr. Zeitschr. f. prak. Heilk., 1867, Nr. 26, S. 43	209	36	17.2
Cincinnati Bd. Health Rpts., 1873-74-75	260	50	19.2
Cincinnati Hosp. Rpts., 1874-75	124	41	33.0
Cohn, Ranking's Abst., No. 28, p. 92	57	24	42.0
Coleman, Inaug. Dissert., Würzb., 1886, S. 13	25	3	12.0
Colin, Études clin. de méd. mil., Paris, 1863	74	4	5.2
Collective Investigation Record, London, 1884, Vol. II	1,065	192	18.0
Colles, U. S. Naval Rpts., 1881, p. 414	517	116	22.4
Cook Co. Hosp., Rpt. first half 1890, p. 36	134	49	14.4
Coudrey, Lancet, 1888	10	1	10.0
Croce, Deutsches Arch. f. klin. Med., Bd. xxxviii, S. 554	610	98	16.0
Dalton, St. Louis Med. Rev., Mar. 30, 1889, p. 355	124	45	36.3
Davis, Cincin. Lancet and Clinic, July 5, 1890, p. 9	15	1	6.6
De Bordes, Nederl. Weekbl. voor Genes., Jan., 1855	90	19	21.0
Derpmann, Inaug. Dissert., Bonn, 1885, S. 19	655	117	17.9
Dessau, Jour. Am. Med. Assoc., Nov. 29, 1890, p. 791	45	0	0.0
Dietl, Wiener med. Wochenschr., 1852	750	69	9.1
Dietl, Ranking's Abst., No. 28, p. 92	1,130	122	11.0
Doubleday, N. Y. Med. Rec., Mar. 28, 1885, p. 345	252	112	44.4
Dutcher, Cin. Lancet and Obsv., Jan., 1861, p. 10	50	1	2.0
Edinburg Infirmary Rpts., 1839 and 1865	80	4	5.0
Emmerich, Arch. f. Hygien., 1884, Bd. ii, Heft. 1	161	46	28.6
Feldhausen, Inaug. Dissert., Göttingen, 1879, S. 15	56	7	12.5
Fenwick, Lancet, Jan. 31 and Feb. 7, 1891	990	233	23.5
Fieandt, Helsingfors Duodecim, 1889	106	3	2.8
Fisher, N. Y. Med. Rec., July 28, 1889, p. 94	26	1	4.0
Fismer, Deutsches Arch. f. k. Med., Bd. xi, 1873	145	13	9.0
Fleischmann, Quoted by Sturges, Lett., p. 329	239	14	5.8
Flint, N. Y. Med. Jour., Mar., 1875, p. 290	133	35	26.3
Folkmann, Inaug. Dissert., Erlangen, 1847, S. 39	125	26	20.8
Forget, Gaz. méd. de Strasb., 1860	32	7	21.8
Fox, Reynolds' System, Phila., 1880, Vol. II, p. 204	55	8	14.5
Franque, Statistik d. Pneumonie, Würzb., 1855	872	262	30.0
Fricke, Inaug. Dissert., Göttingen, 1886, S. 26	179	16	9.0
Frohmüller, Deutsche Klinik, 1855	12	0	0.0
Funck, Inaug. Dissert., Griefswald, 1868	941	102	10.8
Gandini, Ranking's Abst., No. 28, p. 92	25	0	0.0
Gentile, Laennec's Dis. Chest, N. Y., 1830, p. 270	40	1	2.5
Gerhard, Am. Jour. Med. Sci., Vol. XIV, p. 328	41	1	2.5
German Army, Hermant, Lungenentzündung, 1880	42,467	1,524	3.5
Green, N. Y. Med. Rec., July 20, 1889, p. 66	23	1	4.4
Grisolle, Traité de la Pneumonie, Paris, 1864	748	183	24.4
Gualdi, Lancet, 1884, Vol. II, p. 27	39	2	5.1
Hartshorn, Med. News, April 7, 1888	11,173	1,117	10.0
Hegele, Kissel's Pneumonie, Eilenburg, 1852, S. 149	40	0	0.0
Helbing, Canstatt's Jahresb., 1850	62	5	8.0
Hellis, Clin. méd., Paris, 1824	881	173	22.0
Herard, L'Union méd., 1847, No. 127	40	8	20.0
Hermann, Lungenentzündung, München, 1880, S. 13u.42	712	45	6.5
Hjaltelin, Edinb. Med. and Surg. Jour., April, 1864	80	3	3.7
Holt, N. Y. Med. Rec., Feb. 14, 1885, and April 7, 1888	198	37	19.0
Homburger, Inaug. Dissert., Strassb., 1879, S. 71-72	25	9	36.0
Hourmann et Dechambre, Arch. gén. de méd., 1836	109	76	70.0
Hulava, Deutsch med. Zeitung, 1855	12	0	0.0
Huss, Lungenentzündung, Leipzig, 1861, S. 94	2,710	375	13.8
Jackson, N. Y. Med. Jour., March, 1875, p. 290	51	8	15.0
Jones, Jour. Am. Med. Assoc., Aug. 7, 1886, p. 144	238	16	6.5

OBSERVER AND REFERENCE.	Cases.	Deaths	%
Judrin, Thèse de Paris, 1824, p. 17	30	1	3.3
Juergensen, Croup, Pneumonie, u. s. w., Tüb.	567	73	12.7
Kermann, Prager Vierteljahrsschr., 1867, Bd. xcix	40	5	12.5
Kierchensteiner, Aerztl. Intelligenzb., 1880	160	46	28.7
Kissel, Canstatt's Jahresb., 1852	112	5	4.5
Kissel, Pneumonie, Eilenberg, 1852, S. 288-91	301	19	6.3
Kissel, Pneumonie, u. s. w., Würzb., 1866	60	5	8.3
Kreider, N. Y. Med. Rec., Sept. 7, 1889, p. 260	6	2	33.3
Krügerhausen, Praktische Fragmenten, Coblenz, 1845	71	1	1.4
Kühn, Berliner k. Wochenschr., 1879, No. 37	58	8	13.8
Lavagne, Ranking's Abst., No. 28, p. 92	42	1	2.5
Laennec, Diseases of the Chest, N. Y., 1830	94	18	19.1
Laennec (A.), Jour. soc. méd. la Loire, 1825	40	6	15.0
Laveran, Mal. des armeés, Paris, 1875, p. 28	225	46	19.5
Leszinsky, quoted by Zemssen, Pneumonie, 1862, S. 236	245	25	10.0
Leudet, Bull. gén. de thérap., 1863	40	3	7.5
Loomis, N. Y. Med. Gaz., April 30, 1881, p. 154	255	87	34.0
Louis, Rech. sur la effets de la saignée, Paris, 1835	78	28	35.8
Louis, on Phthisis, Boston, 1840, p. 440	75	18	24.0
Macgregor, Med. Notes on the Crimean War	4,027	287	7.0
Markham, Gulstonian Lectures, London, 1886	392	56	14.3
Mason, Conn. Bd. Health Rpt., 1883, p. 358	50	23	46.0
McManus, N. Y. Med. Jour., Sept. 8, 1888, p. 260	62	2	3.3
Mercier, Bull. de la soc. l'Anat., T. xii, p. 279	70	29	40.1
Mitchell, Edinb. Med. and Surg. Jour., Nov., 1857	5,909	1,441	24.4
Mitchell, Ibid., p. 404	240	40	16.6
Montreal Gen. Hosp., Osler, Univ. Med. Mag., Nov., 1888	1,012	207	20.4
Morehead, Ranking's Abst., No. 28, p. 92	164	43	26.7
Morris, London Lancet, N. Y., 1881, Vol. I, p. 519	35	11	31.4
Müller, Ranking's Abst., No. 28, p. 92	10	0	0.0
Neumann, Berliner k. Wochenschr., 1888, S. 119	7	2	28.6
New Orleans Hosp., Op. cit	3,969	1,508	38.0
Oppolzer, Ranking's Abst., No. 28, p. 92	32	5	15.6
Osler, Edinb. Inf. cases, Op. cit	1,716	306	17.8
Paton, Am. Jour. Med. Sci., Oct., 1870, p. 375	96	2	2.2
Patton, Jour. Am. Med. Assoc., Dec. 6, 1890	63	36	57.1
Pause, Lungenentzündung, Leipzig, 1861, S. 154	169	26	15.3
Peacock, St. Thomas' Hosp. Rpts., Vol. V, p. 18	100	12	12.0
Pealee, Chicago Med. Standard, Oct., 1889, p. 126	29	3	10.0
Pelletan, Mém. de l'Acad. de méd., T. VIII, p. 373	75	11	14.6
Pendleburry Hosp. Repts., Manchester, 1881-86	234	3	1.3
Penna. Hosp., Osler, Op. cit	704	205	29.1
Pepper, Bost. Med. and Surg. Jour., April 24, 1890	1,181	173	14.6
Piorry, Ranking's Abst., No. 28, p. 92	30	2	6.6
Pr. Edward's Is., 1889, N. Y. Med. Rec., July 13, '89, p. 44	546	40	7.3
Prus, Mém. de l'Acad. de méd., 1840, T. VIII, p. 13	129	77	59.0
Rall, Inaug. Dissert., Stuttg., 1887, S. 5	88	25	28.0
Rasori, Arch. d. Med., 1824	832	173	22.0
Reuf, Ranking's Abst., No. 28, p. 92	94	5	5.0
Reyburn, Am. Jour. Med. Sci., April, 1866, p. 368	202	14	6.9
Rietz, Inaug. Dissert., Jena., 1868, S. 19	392	50	12.8
Rilliet et Barthez, Mal. des enfants, Paris, 1838	81	77	95.0
Robinson, London Lancet, N. Y., 1852, Vol. II, p. 288	32	0	0.0
Rodman, N. Y. Med. Rec., 1875, No. 227	98	6	5.9
Rodman, Am. Jour. Med. Sci., Jan., 1876	98	25	25.0
Roth, Statistik d. Pneumonie, Würzb., 1860	237	45	18.9
Routh, London Lancet, N. Y., 1855, Vol. II, p. 36	193	9	4.5
Salawa, Schmidt's Jahrb., 1855, Bd. LXXXVI, S. 30	15	0	0.0
Salem Hosp. Repts., 1877, p. 8	2	1	50.0
Sampson, London Lancet, N. Y., 1851, Vol. II, p. 36	909	209	23.0
Samter, Inaug. Dissert., Breslau, 1881	331	39	11.9
Schapira, Inaug. Dissert., Würzb., 1877	258	36	14.0
Scheef, Inaug. Dissert., Tübingen, 1882, S. 15	547	72	13.1
Schlesinger, Inaug. Dissert., Berlin, 1878, s. 23, 24	2233	51	15.3
Schmidt, Ranking's Abst., No. 28, p. 92	152	20	13.0
Schmidtmann, Hufeland's Jour., Bd. III, S. 441	68	2	3.0
Schroeder, Inaug. Dissert., Kiel, 1882	1,277	183	14.8
Schultz, Jour. Am. Med. Assoc., July 30, 1886	2393	16	6.5
Scotter, Lancet, 1890, Vol. II, p. 1170	29	18	62.1
Sigmund, Ranking's Abst., No. 28, p. 92	743	104	14.0
Skoda, Allgem. Weiner med. Zeitung, 1853	555	74	13.3
Smith, Schmidt's Jahrb., Bd. CXXXII, S. 321	1063	3	4.7
Spaeh, Inaug. Dissert., Marb., 1870, S. 4	50	12	24.4
Stecher, Inaug. Dissert., Leipzig, 1866, S. 14	656	128	19.5
Steffan, Klinik d. Kinderk., Berlin, 1865	94	13	13.8
Steinmetz, Ohio Med. Recorder, June, 1877, p. 34	83	24	29.0
Stephan, Neder. Weekbl., 1861	25	9	36.0
Stortz, Inaug. Dissert., Würzb., 1884	1,432	258	18.5
Stevens, Am. Jour. Med. Sci., Oct., 1870, p. 376	78	5	6.5
Stierlin, Berliner k. Wochenschr., 1870, No. 26	150	7	4.6
Stierlin, quoted by Zemssen, No. 28, p. 92	150	7	4.6
St. Mary's Hosp., Quincy, Rept., 1876	4	1	25.0
St. Michael's Hosp., Newark, Rept., 1876	29	4	13.0
Stoehmi, Ranking's Abst., No. 28, p. 92	30	0	0.0
Stockholm Med. Hosp., Op. cit., p. 86	670	49	7.3
Strong, N. Y. Med. Rec., March 16, 1889, p. 291	106	1	5.0
Sturges, Pneumonia, London, 1876	452	35	7.7
Thiele, Deutsche Klinik, 1855	6	0	0.0
Thielmann, Ranking's Abst., No. 28, p. 92	110	12	11.0
Thomas, Am. Jour. Med. Sci., Oct., 1870, p. 376	106	3	3.0
Thomas, Arch. d. Heilk., Bd. IV, Heft. 2	65	14	21.5
Thomas, Richmond and Louisville Med. Jour., 1876	68	1	1.9
Tommasini, Delle Peripneumonie, Bologne, 1817	115	14	12.1
Townsend, Jour. Am. Med. Assoc., Dec. 1, 1888, p. 789	42	2	5.0
Townsend and Coolidge, Med. News, July, 1889	1,000	250	25.0
Tregagno Epidemic, Deutsch med. Zeit., 1883, Nr. 41	100	30	30.0
Trousseau, Ranking's Abst., Nr. 28, p. 92	92	2	4.0
U. S. Army, 1840-9, Hartshorn, Op. cit	2,073	224	10.8
U. S. Army, Rebellion, Med. Hist., Vol. I, Pt. 1	77,335	20,116	26.1
U. S. Army, 1870-74, Circular No. 8	791	110	14.0
U. S. Army, 1888, Rept., p. 88	90	26	26.0
U. S. Marine Hosp. Service, 15 years, Repts.	3,511	598	17.0
U. S. Naval Repts., 1879-81-82-88	171	11	6.4
Valleix et Vernois, Quoted by Buchut, Dis. Chil., p. 325	128	127	99.2
Varrentrap, Henle's u. Pfeiffer's Zeitschr., 1851	23	1	4.0
Vienna Gen. Hosp., Ranking's Abst., No. 28, p. 92	6,798	1,966	29.0
Vienna Gen. Hosp., Juergensen, Ziemssen's Handb	7,942	1,946	24.7
Voght. Bull. gén. de thérap., Jan., 1860	56	4	7.0
Vogt, Quoted by Kocher, Op. cit., S. 28	51	4	7.8
Wagner, Contrastimulus, u. s. w., Berlin, 1819	13	7	53.8

Observer and Reference.	Cases.	Deaths	Per Cent
Waller, Inaug. Dissert., Erlangen, 1877, S. 25	81	9	11.1
Wassider, Ranking's Abst., No. 28, p. 92	112	4	3.5
Waters, Liverpool and Manchester Repts., Vol. IV	59	2	3.4
Waters, Diseases of the Lungs, p. 87	44	1	2.4
Witherspoon, Am. Jour. Med. Sci., Oct., 1870, p. 376	72	2	3.0
Witte, Inaug. Dissert., Berlin, 1877, S. 41	505	25	5.0
Wittich, Ranking's Abst., No. 28, p. 92	23	0	0.0
Woman's Hosp., Phila., Rept., 1876, p. 12	4	0	0.0
Woodson, Am. Prac., Mar., 1870, p. 289	20	2	10.0
Woodward, U. S. Marine Hosp. Repts., 1890, p. 155	13	2	15.0
Wuchcrer, Ranking's Abst., No. 28, p. 92	90	1	1.1
Wunderlich, Arch. f. p. Heilk., Bd. III, 1856	237	25	10.5
Wunderlich, Inaug. Dissert., Tüb., 1858, S. 31	50	8	16.0
Zeigeli, Satterthwaite, Med. News, Jan. 5, 1889	40	0	0.0
Author	498	81	16.4
Totals and average [31]	223,730	40,276	18.1

Several fallacies are liable to creep into a table of this kind. One of these is the fact that some observers count, whilst others do not, those cases of pneumonic inflammation occurring in the course of other grave disorders, *e. g.*, diabetes, chronic nephritis, cerebral disease, cancer, typhoid fever, etc. It is clear that if such cases are included in the calculation, the death-rate will be higher than when primary cases are alone considered. Again, many observers report a series of cases to illustrate the advantages of some favorite method of treatment. In this instance the reporter is prejudiced, and is prone to omit[32] from his list as many of the cases as can possibly be eliminated, in order that his percentage of cures may be raised.

There are certain antecedent and surrounding circumstances which influence favorably, or the reverse, the termination of the disease; *e. g.*, age, sex, constitution, temperament, idiosyncrasies, previous health, habits, etc., of the patient, and these must all be considered in forming a prognostic opinion.

Age exercises a remarkable influence over the fatality of pneumonic fever. Patients between the ages of 10 and 40 years withstand the malady better than do those older or younger, and the nearer we approach the extremes of life, the greater the mortality.[33] The death-rate in patients over 60 years of age is, according to some careful observers, as high as 80 per cent., and in the very young it is nearly as great. In the case of infantile pneumonic fever, there is a difference of opinion as to its fatality.

Thus, Trousseau[34] is said to have never lost a genuine case in a child. Sturges[35] says that "the old are likely to die, the young to recover." D'Espine[36] says that the danger in infants is very slight. Ziemssen[37] lost only 7 of 201—3.3 per cent.—infantile cases. Juergensen[38] lost 4 of 171 cases in children under 10 years of age—a death-rate of only 2.3 per cent. Baginsky[39] considered the danger slight. Vogel[40] says that in very young children the death-rate is considerable, but "children over 2 years of age bear lobar pneumonia as well as adults." Steffen[41] reports a mortality of 13.8 per cent. in children, and Funck[42] places it at 10.3 per cent. Barthez[43] had but 2 deaths in 212 cases between the ages of 2 and 15 years—a mortality of 1.9 per cent. Gerhard[44] lost only one of 40 patients ranging in age from 6 to 16 years. Lebert[45] regards the danger very slight in patients aged from 5 to 30 years. Fox[46] says that "childhood is a doubtful cause of death." Stortz[47] and Schroeder[48] say that the danger is less in children than in adults, and this opinion is shared by Schapira,[49] Franque[50] and others.[51] My own infantile cases have died in less numbers than in the case of adults.

The percentage of deaths at various ages[52] is shown in the following table:

Table II.—Showing Death Rate of Pneumonic Fever at Various Ages—Per Cent.

Authority.	—10	10–20	20–30	30–40	40–50	50–60	60–70	70+
Bamberger[53]	. . .	4.0	3.2	5.2	7.0	35.0	40.0	50.0
Biach[54]	. . .	9.4	13.3	23.3	31.6	37.8	54.0	56.6
Chomel[55]	. . .	. . .	13.6	18.0	33.3	40.0	63.0	. . .
Derpmann[56]	26.3	49.2	48.9	38.9	48.1	40.6	11.5	21.2
Doubleday[57]	. . .	21.5	33.3	53.3	70.7	66.6	56.2	50.0
Franque[58]	. . .	3.1	10.9	23.5	33.3	76.9	. . .	. . .
Huss[59]	11.1	7.8	7.9	15.1	23.7	26.9	38.9	60.0
Juergensen[60]	3.0	. . .	4.0	6.0	10.0	12.0	16.0	11.0
Klinger[61]	43.4	2.2	4.3	5.0	7.3	15.2	17.8	10.7
Lépine[62]	. . .	. . .	14.0	20.0	25.0	30.0	30.0	80.0
Pause[63]	26.5	. . .	. . .	17.2	10.5	11.1	35.7	38.4
Roth[64]	. . .	4.0	7.6	20.9	26.7	32.3	26.7	60.0
Schapira[65]	. . .	1.4	2.8	11.4	21.7	24.0	50.0	75.0
Stechert[66]	46.1	6.8	7.2	21.1	40.7	52.0	66.6	66.6
Stortz[67]	. . .	2.4	6.0	10.5	26.8	33.3	50.0	50.0
Swett[68]	. . .	. . .	24.4	14.3	16.6	20.0	25.0	. . .
Townsend and Coolidge[69]	10.0	10.6	18.5	25.0	29.2	55.0	46.9	66.7
Author[70]	8.0	3.1	7.0	9.4	13.0	24.0	37.0	53.0

Soldiers, on account of their age and surroundings, and from coming early under careful treatment and nursing, present but a light death-rate.[71]

In the German army during the years of peace—

1 Restorative Treatment of Pneumonia, p. 45.
2 See Cincinnati Lancet and Observer, November, 1862, p. 668.
3 Rev. med. de Toulouse, July, 1878.
4 Physician and Surgeon, April, 1876, p. 161.
5 Am. Jour. Med. Sci., October, 1870, p. 375.
6 Richmond and Louisville Med. Jour., April, 1876.
7 Pleuritis u. Pneumonie, Berlin, 1862, S. 256.
8 London Practitioner, Vol. xxxi, p. 39.
9 Clinical Medicine, Phila., 1873, Vol. i, p. 663.
10 Pneumonie u. Pleuritis, Würzb., 1880, S. 3 und 66.
11 N. Y. Med. Record, July 14, 1877.
12 Contributions to Clinical and Practical Medicine, London, 1887.
13 See Barnett, Jour. Am. Med. Assoc., December 11, 1886, p. 656; Morrow, Prac. Med., Columbus, 1853, p. 706; Rindfleisch, Path. Histol., Phila., 1872, p. 391; et al.
14 N. Y. Med. Record, September 17, 1887, p. 375.
15 Medical News, April 7, 1888.
16 Prac. Medicine, Phila., 1847, Vol. xi, p. 41.
17 See Chaumier, Gaz. des Hôp., 1884; Cobbleigh, Phila. Med. World, April, 1885, p. 132; Donaldson, N. Y. Med. Jour., March 7, 1885, p. 267; Grimshaw, Dublin Jour. Med. Sci., May, 1875; Holt, N. Y. Med. Record, February 14, 1885, p. 174; Legendre, Arch. gen. de med., 1839; Rodman, N. Y. Med. Record, 1875; Stratton, Med. Brief, May, 1886, p. 205; Whittaker, Cin. Clinic, June 16, 1877; et al.
18 Am. Jour. Med. Sci., Vol. xiv, p. 328.
19 Smith, Guy's Hosp. Rep., Vol. xliv, p. 59; et al.
20 Med. Dic., N. Y., 1855, Vol. xi, p. 892.
21 Dis. Int. Valley N. A., Phila., 1854, p. 853.
22 Medical Sketches, Dedham, 1815.
23 See Andral, Path. Med., Paris, 1836, T. i, p. 386; Cowan, Trans. Tenn. State Med. Soc., 1891, p. 195; Gairdner, Lancet, 1887, Vol. ii, p. 247; Golyuz, Trudi Russk. Obsh. ochran. narod-zdravlja, St. Petersb., 1890, vi, p. 140; Loubimoff, Protokol. Zasaid. Kavkazsk. med. Obsh., Tiflis, 1889–90, xxvi, p. 444; Patten, Therap. Gaz., April, 1885, p. 234; Robb, Jour. Am. Med. Assoc., November 28, 1885, p. 614; Routh, London Lancet, N. Y., 1855, Vol. ii, p. 145; Steinmetz, Ohio Med. Record, June, 1877, p. 34; Woodson, Trans. Tenn. State Med. Soc., 1891, p. 193; et al.
24 Med. News, June 9, 1883, p. 646.
25 Pepper's Syst. Med., Phila., 1885, Vol. iii.
26 Lancet, 1891, Vol. i, p. 647.
27 Op. cit., p. 267.
28 Jour. Am. Med Assoc., October, 1885.
29 Natural History of Pneumonia, London, 1876, p. 203.
30 Op. cit.
31 Smith, N. Y. Med. Rec., October 20, 1888, p. 469; Woodson, op. cit., p. 193; et al.
32 No attempt has been made to render this table complete.
33 See also Gairdner, Dublin Med. Press, February 28, 1855.
34 See also Aitken, Sci. and Prac. Med., Vol. ii, p. 74; Bamberger, Wiener Med. Wochenschr., 1857, Nr. 50 u. 51; Biach, Med. Jahrb., Wien., 1879; Chomel, Pneumonie, Leipzig, 1841, S. 394; D'Espine, Ann. d'hyg. et de med., 1840, T. xxiii, p. 50; Doubleday, N. Y. Med. Rec., March 26, 1885, p. 343; Forscheimer, Cincinnati Lan. and Clinic, January 28, 1882; Fox, Op. cit., p. 205; Franque, Statistik d. Pneumonie, Würzb., 1855; Grisolle, Traite de la pneumonie, Paris, 1864; Hourmann et Dechambre, Arch. gen. de med., T. xii, p. 28, Huss, Op. cit., S. 94; Juergensen, Ziemssen's Handb., Bd. v; Lebert, Berliner k. Wochenschr., September 4, 1871; Lees, Lancet, 1889, Vol. ii, p. 890; Lepine, Pneumonie, Wien., 1883, S. 159; Loomis, Pepper's Syst. Med., Phila., 1885, Vol. iii, p. 195; Niemeyer, Prac. Med., Vol. i, p. 187; Porter, St. Louis Med. Press, March 30, 1889, p. 340; Rilliet et Barthez, Mal de l'enf., Paris, 1838; Robb, Op. cit., p. 614; Routh, Op. cit., p. 145; Schapira, Inaug. Dissert., Würzb., 1877; Schroeder, Inaug. Dissert., Kiel., 1882; Smith, Guy's Hosp. Repts., Vol. xliv, p. 59; Speck, Inaug. Dissert., Marb., 1870, S. 4; Sturges, Op. cit., p. 203; Swett, Dis. Chest., N. Y., 1856, p. 86; Ziemssen, Op. cit.; et al. Schuyler, N. Y. Med. Jour., May 14, 1887, p. 543, says that "age in itself is not a cause of death in acute lobar pneumonia."
35 Op. cit., p. 203.
36 Trans. Intern. Med. Cong., Washington, 1887.
37 Pleuritis u. Pneumonie, Berlin, 1862, S. 256.
38 Ziemssen's Handb. d. Spec. Path. u. Therap., Bd. v, 1877, S. 158.
39 Pneumonie u. Pleuritis, Würzb., 1880, S. 66.
40 Diseases of Children, Am. Ed., p. 294.

1868 to 1878, excepting the years 1870–71—there were 42,476 cases of pneumonic fever, with 1,524 deaths, a rate of only 3.6 per cent. During the twenty-six years from 1854 to 1879, there were at the Germersheim garrison 396 cases of this disease, 24 proving fatal, a rate of 6.6 per cent. In the Stockholm military hospital during the four years 1842–45, there were 670 cases of this malady, with 49 deaths, a rate of 7.3 per cent.[72]

Pneumonic fever is much more fatal in ordinary hospital than in private practice.[73] This is due, in a measure, to the fact that such cases usually come late under treatment, and the patients are of a class which bears up illy under severe illness. The jolting to which they are often subjected, in being transported to the hospital, is also very injurious.[74]

Pneumonic fever is more dangerous in the female than in the male,[75] and this in the face of the fact that the normal death-rate for males is slightly in excess of that for females in diseases of all kinds.[76]

Franque[77] found the death-rate in 1,796 cases of pneumonic fever, 17 per cent. for males and 23 per cent. for females. Lebert[78] found the rate 16 and 21.8 per cent. respectively. In the Munich General Hospital the rate is 16.6 and 23 per cent. respectively.[79] In the three large hospitals of Vienna, the death-rate in 8,247 male cases was 20.7 per cent., and in 3,195 female cases 30 per cent.[80] Bamberger[81] found the rate in males 8.7, and in females 16.6 per cent. Roth[82] found it 16.2 and 23.6 per cent. respectively.[83]

TABLE III.—SHOWING COMPARATIVE MORTALITY OF PNEUMONIC FEVER BY SEXES.

OBSERVER.	MALES.			FEMALES.			TOTAL.		
	Cases.	Deaths.	%	Cases.	Deaths.	%	Cases.	Deaths.	%
Berlin Charite[84]	453	90	20.0	114	26	23.0	567	116	20.5
Blach[85]	8,247	1,707	20.7	3,195	959	30.0	11,442	2,666	24.2
Chomel[86]	313	38	12.5	70	22	32.0	383	60	15.6
Dietl[87]	304	28	6.7	297	41	12.1	601	69	10.4
Huss[88]	2,259	291	12.9	451	84	18.6	2,710	375	13.8
Huss,[89] Vienna Cases	3,981	831	20.9	2,009	610	30.4	5,990	1,441	24.5
Juergensen[90]	5,467	1,149	21.0	2,475	795	31.1	7,942	1,944	24.9
Louis[91]	52	15	29.0	23	3	13.3	75	18	24.0
Munich Hosp.[92]	794	132	16.6	352	81	23.0	1,146	213	18.5
Pause[93]	86	14	16.2	83	12	14.4	169	26	15.3
Stecher[94]	548	95	17.3	108	33	30.6	656	128	19.5
Stortz[95]	199	23	10.6	87	22	25.3	286	45	25.7
Townsend & Coolidge[96]	1,141	182	25.0	276	68	25.0	1,000	250	25.0
Waller[97]	71	7	10.0	10	2	20.0	81	9	11.1
Author	295	41	14.3	203	40	19.7	498	81	16.4
Totals and averages	25,853	4,643	19.4	9,753	2,798	28.7	33,606	7,441	22.1

It has been supposed that this extraordinary fatality of pneumonic fever in the female is largely confined to the menstrual and childbearing periods of life,[98] but the statistics of Klinger,[99] Stortz,[100] and of my own cases, render this improbable.

The occurrence of menstruation during an attack of pneumonic fever has had usually, in my experience, a beneficial influence.[101] Under such circumstances the fever often declines, the nervous excitement is lessened, and there is a distinct amelioration of all the symptoms.

According to Chomel,[102] menstruation increases the danger, whilst Grisolle[103] says that it increases the severity, but not the mortality of the disease.[104]

Pregnant females, according to Greene[105] and others, are necessarily in greater danger than those who are not in this condition, from the fact that there is added to the dangers of the disease those of abortion or premature delivery,[106] which occurs in a considerable proportion of cases.

Chomel[107] considers pneumonic fever in pregnant females as usually fatal; the danger being due to the impediment to respiration and the frequent occurrence of abortion. Of 39 cases analyzed by Chatelain,[108] abortion or premature delivery occurred in 19, and of these 19, 10 died, and of the 39, 20 died. Of 43 cases analyzed by Juergensen,[109] 25 aborted, and of these 7 died.[110] Of my 11 cases, 4 aborted and one died.[111]

Post-mortem parturition may occur, as in the case observed by Post,[112] in which a woman seven months pregnant died in the St. Louis Female Hospital in 1872, of pneumonic fever. There were no symptoms of labor before death, but shortly afterwards it was discovered that a living child had been born, which soon died.[113]

Pneumonic fever occurring during the puerperium is also extremely dangerous.[114]

Inasmuch as the different races of mankind have various physical and mental peculiarities, it is a fair inference that they will be differently affected by disease, and observation has abundantly confirmed the supposition in this disease. Pneumonic fever is very much more dangerous in the negro than in the Caucasian race.[115]

In estimating the mortality of any disease as it manifests itself in the negro of North America, it must be borne in mind that he has an inherent antipathy to consulting a physician. If he is indisposed,

[41] Klinik d. Kinderkrankh., Berlin, 1865.
[42] Inaug. Dissert., Griefsw., 1868.
[43] Bull. de l'Acad. de med., 1863, T. xxvii, p. 676.
[44] Am. Jour. Med. Sci., Vol. xiv.
[45] Berliner k. Wochenschr., September 4, 1871.
[46] Op. cit., p. 399.
[47] Inaug. Dissert., Würzb., 1884, S. 40.
[48] Inaug. Dissert., Kiel, 1882.
[49] Inaug. Dissert., Würzb., 1877, S. 19.
[50] Op. cit., Diss.
[51] Rafz, Jour. de med. et de chir., T. iii, p. 101; et al. Snow, N. Y. Med. Rec., June 15, 1889, p. 652, considers the danger increased by the presence of rickets.
[52] See also Loomis, Prac. Med., N. Y., 1884, p. 95; Schuyler, N. Y. Med. Jour., May 14, 1887, p. 543; et al.
[53] Wiener med. Wochenschr., 1857.
[54] Op. cit.
[55] Pneumonie, Leipzig, 1841, p. 304.
[56] Inaug. Dissert., Bonn, 1885, S. 19.
[57] N. Y. Med. Rec., March 28, 1885, p. 343.
[58] Statistik d. Pneumonie, u. S. W., Würzb., 1855.
[59] Lungenentzündung, Leipzig, 1861, S. 94.
[60] Op. cit.
[61] Bayer, ärztl. Intelligenzbl., 1874, Nr. 35 u. 36.
[62] Pneumonie, Wien., 1883, S. 159.
[63] Lungenentzündung, Leipzig, 1861, S. 154.
[64] Inaug. Dissert., Würzb., 1860.
[65] Inaug. Dissert., Würzb., 1877.
[66] Inaug. Dissert., Leipzig, 1866, S. 14.
[67] Inaug. Dissert., Würzb., 1884, S. 19.
[68] Diseases of the Chest, N. Y., 1856, p. 85.
[69] Trans. Am. Clinical Assoc., 1889.
[70] Medical Progress, February, 1890, p. 637.
[71] See Colin, Etudes clin. de med. mil., Paris, 1863; Hermann, Lungenentzündung, München, 1880, S. 6; et al.
[72] See Huss, Op. cit., S. 87.
[73] See Lebert, Berliner k. Wochenschr., Sept. 4, 1871; et al.
[74] See Wells, Jour. Am. Med. Assoc., Dec. 19, 1885.
[75] Bamberger, Wiener. m. Woch., 1857; Chatelain, Jour. de med. de Brux., 1870; Chomel, Op. cit., S. 305; Fox, Op. cit., p. 305; Franque, Inaug. Dissert. Würzb., 1855; Funck, Inaug. Dissert., Griefsw., 1868; Green, Oubeur, Dic. Med. N. Y. 1884, p. 881; Huss, Op. cit., S. 71; Lebert, Klinik d. Brustk. Tüb., 1873; Lepine, Pneumonie, Wien, 1883, S. 160; Pause, Lungenentzündung, S. 126; Robb, Jour. Am. Med. Assoc., Nov. 28, 1885, p. 614; Routh, Lon. Lancet, N. Y., 1855, Vol. xl, p. 145; Schaplra, Inaug. Dissert., Würzb., 1877, S. 16; Stortz, Inaug. Dissert. S. 39; Swett, Dis. Chest. N. Y., 1856, p. 87; Waller, Inaug. Dissert. Erlangen, 1877, S. 25; Walshe, Dis. Lungs, Phila. 1860, p. 214; et al.

76—TABLE I. NOTES.—SHOWING DEATH RATE FROM ALL CAUSES BY SEXES IN MASSACHUSETTS.

YEAR.	Males Per 1,000.	Females Per 1,000.	Excess of Males over Females per 1,000.
1860	19.3	18.4	.9
1865	21.7	19.6	2.1
1870	19.5	18.6	.9
1875	21.8	20.5	1.3
1880	20.3	19.3	1.0
Averages	20.5	19.3	1.2

or even seriously ill, he either disregards his complaint, or makes use of the domestic remedies suggested by some aged negress, thus remaining for days in the most unsuitable surroundings, without any medical treatment, at a time when proper measures might be of much avail—until the malady has proceeded beyond the bounds of assistance.

It is a general impression with writers, that the strong, the robust and the generally healthy withstand attacks of pneumonic fever better than those of slighter build,[116] the cachectic and the sickly. This may be true in the experience of others, but it certainly does not accord with my own observation, and I have for many years looked upon cases of the disease occurring in the robust specimens of manly vigor with suspicion.

Irregular modes of living and habits of drunkenness[117] add greatly to the inherent danger of the malady.[118]

Huss[119] lost 20 per cent., and Fismer[120] 50 per cent., of alcoholic cases, and Greene[121] estimates the death-rate of such at from 25 to 50 per cent. I am inclined to think that, in confirmed drunkards, it exceeds even these figures.

The victim of chronic alcoholism is in such a state of physical and mental weakness as to be illy able to withstand the onslaught of any disease, and especially one of the gravity of pneumonic fever. He is usually a man having the appearance of robust health, but a careful scrutiny will reveal this to be a delusion and a snare. His bloated and rubicund visage, his ponderous abdomen and his full but soft fleshy parts are no more the indication of strength and vigor than is the padding of a Punch and Judy character. His digestive apparatus is in a state of chronic irritation, and it has for so long a time been accustomed to excessive stimulation that it no longer responds to ordinary irritation, and in the case of disease refuses longer to receive food or even the fiery draughts which have been the patient's ruin. The nervous system also weakens remarkably.

When pneumonic fever attacks such a person it is prone to pursue a latent and insidious course. The initial chill is either absent or but slightly marked. The patient has, for several days, lost his appetite and cannot retain upon his stomach his accustomed ration of alcoholic liquors. He is nervous by day and restless by night. He feels tired and languid, and no longer seeks his companions at his accustomed haunts, but prefers to remain at home, and yet is afraid to be alone. With the access of the disease he is at once and completely prostrated. He may have a cough, with expectoration and some uneasiness referable to the chest. The cough, if present, often escapes notice from the fact that these old topers have an habitual cough and hawking. If the lungs be now examined, the ordinary physical signs of pneumonic inflammation will be found. Delirium tremens is of very frequent occurrence, and the patient, obtaining no sleep, together with the constant action, absence of nutrition and the ravages of the disease, soon falls into a state of profound depression and usually dies.

The seat, extent and degree of the local inflammation will greatly modify the prognosis.[122] It is generally considered more dangerous when the upper lobes are affected[123] than when the lesion is basic, although this view does not accord with my experience or the opinion of a few others.[124]

Ruehle[125] is of the opinion that when the apex is affected, the fever continues longer, resolution is delayed and recovery is not so perfect as when the base is inflamed.

Auenbrugger[126] considered the danger enhanced when the local lesion was on the left, and Chomel[127] when on the right side. In my cases the fatality has been greatest when the right lung was inflamed, but I am inclined to attribute the result to the fact that the average extent of pulmonary involvement was greatest in the right sided cases.[128] The more extensive the local involvement, especially when both lungs are affected, the greater the danger.[129]

Schuyler[130] says that "inasmuch as the more extensive consolidations generally occur in robust subjects, who, as a rule, recover, and the less extensive and less perfectly formed processes more generally occur in depraved subjects in whom fatality is, as a rule, more frequent, therefore a greater extent of local process may be held as indicating a more tonic and resisting state of the patient, and a better prognosis, while a lesser extension may denote a more asthenic constitutional state, and hence a worse prognosis."[131]

The spreading and wandering forms of the disease are very fatal.[132] The occurrence of gangrene, abscess, general suppuration, etc., greatly increase the danger.[133]

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77 Op. cit.
78 Klinik d. Brustkrankh., Tüb., 1873.
79 Stortz, Op. cit., S. 7.
80 Biach, Med. Jahrb., Wien, 1879.
81 Wiener med. Wochenschr., 1857.
82 Op. cit.
83 Klinger, Lungenkrankh. in Bayern, 1872, found the deaths in males more numerous than in females.
84 Annalen, 1874-75.
85 Med. Jahrb., Wien, 1879.
86 Lungenentzündung, S. 305.
87 Lungenentzündung, Wien, 1853, S. 37.
88 Lungenentzündung, S. 91.
89 Op. cit., S. 91.
90 Ziemssen's Handb., Bd. V.
91 Phthisis, Boston, 1836, p. 440.
92 Berichte, 1865-75.
93 Op. cit., S. 154.
94 Inaug. Dissert., S. 14.
95 Inaug. Dissert., Würzb., 1884.
96 Trans. Am. Climat. Assoc., 1889.
97 Inaug. Dissert., Erlangen, 1877.
98 See Huss, Op. cit., S. 93.
99 Pneumonie in Bayern, München, 1872.
100 Inaug. Dissert., Würzb., 1884.
101 See also Wunderlich, Spec. Path. u. Therap., Stuttg., 1858.
102 Pneumonia, Leipzig, 1841, S. 396.
103 Traite de la pneumonie, Paris, 1864.
104 See also Fox, Reynolds' Syst. Med., Phila., 1880, Vol. II, p. 205; Huss, Lungenentzündung, Leipzig, 1861; et al.
105 Qualn's Dic. Med., N. Y., 1884, p. 881.
106 Chatelain, Jour. de med. de Brux., 1870; Fox, Op. cit., p. 205; Gusserow, Berliner k. Wochenschr., 1880, Nr. 17; Huss, Op. cit.; Juergensen, Ziemssen's Handb., Leipzig, 1877, Bd. V. S. 127; Grisolle, Op. cit. p. 470; Lepine, Pneumonie, Wien, 1883, S. 188; Ringe, Volkmann's k. Vortrage, Nr. 174; Robb, Jour. Am. Med. Assoc., Nov. 28, 1885, p. 614; Wells, Ibid., Dec. 19, 1886; et al.
107 Op. cit., S. 307.
108 He thinks that during the last three months 50 per cent. die. See Jour. de med. et de chir. de Brux, 1870, Juine.
109 Op. cit., S. 28.
110 Op. cit., S. 127.
111 For further information consult Carroll, Cincin. Lan and Obsr., Aug. 1862, p. 473; Da Costa, Jour. Am. Med. Asso., Dec. 17, 1887, p. 791; Fisher, N. Y. Med. Rec., July 28, 1888, p. 93; Folkmann, Inaug. Dissert., Erlanger, 1877, S. 35; Gehrung, Am. Prac., Aug. 1877, p. 74; Harrison, Jour. Am. Med. Assoc., Aug. 13, 1887, p. 210; Heygate, Lancet, 1887, Vol. xi, p. 1252; Kemper, Med. World, 1888, p. 261; Korotkevich, Russkaya Med.; McManus, N. Y. Med. Rec., Sept. 8, 1888, p. 260; Pause, Lungenentzündung, Leipzig, 1861, S. 84; Polk, N. Y. Med. Jour. Sept. 15, 1888, p. 284; Rall, Inaug. Dissert. Erlangen, 1887, S. 34; Richardson, Cin. Lan and Observ. Oct. 1862, p. 391; Schapira, Inaug. Dissert., S. 19; Stechert, Inaug. Dissert., Leipzig, 1866, S. 28; et al.
112 Jour. Am. Med. Assoc., Oct. 29, 1887, p. 566.
113 Coles, Ibid., p. 566.
114 Barnes, Obst. Trans., Vol. iv, p. 55; Chomel, Op. cit. S. 307; Derville, Pleuro-pneumonie dans la Fievre puerperale, Paris, 1874; Fox, Op. cit. p. 205; Kreider, N. Y. Med. Rec., Sept. 7, 1889, p. 260; Pause, Op. cit., S. 85.
115 See Armstrong, U. S. Marine Hospt. Rpts., 1886, p. 123; Banjon, Mal. de Cayenne, T. I, p. 73; Cartwright, N. O. Med. Jour., Vol. ix, p. 305; Daniell, Med. Topog. Guinea, p. 95; Drake, Dis. Int. Valley N. A., Phila., 1854, p. 416; Grier, N. O. Med. Jour., Vol. ix, p. 430; Harris, Trans. Am. Med. Assoc., Vol. v, p. 373; Jackson, Sketches, Vol. xi, p. 84; Lewis, N. O. Med. and Surg. Jour., Vol. iv, p. 33; La Roche, Pneumonia, Phila., 1854, p. 416; Pendleton, Southern Med. and Surg. Jour., 1849; Robb, Jour. Am.

The duration of the disease has an important bearing upon the prognosis, and "it is often a question of the intensity of the disease on the one hand and the resisting powers of the individual on the other."[134] If improvement does not occur at about the time convalescence usually begins the prognosis is re- lered grave.

Epidemics of pneumonic fever vary greatly in their fatality; in some scarcely any die and in others almost every patient is doomed. The epidemic prevalence of other diseases, *e.g.*, typhoid, typhus[135] or cerebro-spinal[136] fever, etc., increases the severity and danger of pneumonic fever.

Complications of all kinds add to the fatality of the disease.[137] The great variety of these, together with their nature, seat, tendencies and surrounding influences renders an intelligent analysis of the increased dangers impracticable. It may be said that, as a rule, all anomalous features are of evil import. The subsequent attacks are attended by less danger than are the primary.[138]

The death-rate of pneumonic fever varies from year to year,[139] and month to month, the variations being due to accidental influences[140] which either elude observation or defy analysis.

Briquet,[141] Fox[142] and others[143] consider pneumonic fever more fatal during the cold than the warm months, but Grisolle[144] objects to this conclusion and it is not in accordance with my experience.[145]

In fatal cases death may occur in a variety of ways. In some rare cases the patient is overwhelmed by the onset of the disease and dies in a few hours from extensive pulmonary congestion, with or without profound cerebral symptoms. In another small proportion of cases the morbid processes are carried a step beyond this. The fever rises rapidly to a high point, there is great respiratory oppression, and after perhaps but twenty-four or thirty-six hours convulsions, delirium or coma ends the scene. In these cases the mind of the beholder is appalled by the suddenness with which life was extinguished.

At a later period, also, death may come on very swiftly, sometimes like a flash, from heart clot or cardiac paralysis. In general, however, when death occurs after the first days of illness, the end is approached very gradually and with ample warning.[146] The temperature remains high, cyanosis appears and gradually deepens; the respiratory oppression is increased, and breathing becomes more and more difficult and, finally, more and more shallow; the pulse beats with great rapidity and becomes smaller, weaker, and irregular; the nose, then the hands and lastly the feet, ear and tongue become cold and the surface of the body is covered with a cold and clammy perspiration; the senses are usually benumbed[147] and there is muscular paresis, and often slight tremor; the cough becomes less frequent and weaker and finally ceases altogether; the lower jaw is relaxed; the tongue, mouth and pharynx becomes dry and deglutition becomes difficult and finally impossible; the secretions are not removed from the air passages and a loud and ominous tracheal rattle startles and appalls the listener[148]; the respirations grow weaker and weaker, and with pauses of longer and longer duration, until at last they cease and life is a thing of the past.

It has long been supposed, erroneously, I think, that death, when it occurs, is likely to come at the end of a septenary period. Thus Delafield[149] in an analysis of 123 fatal cases found that the largest number died on the seventh day; the next largest on the fourteenth day; the next largest on the twenty-first day, and the next largest on the twenty-eighth day. These remarkable coincidences probably could not be duplicated in any other series of cases.[150]

No series of observations sufficiently extensive have been made as to the hour when death oftenest occurs; but of between 5,000 and 6,000 deaths from all causes Haviland[151] found the greatest number to have occurred between 1 and 8 o'clock A.M., and the least between 1 and 12 o'clock P.M., whilst Burns[152] in analyzing 15,000 deaths came to the conclusion that death occurs irrespective of hours.

Instances of sudden death during the progress of this disease are of comparatively frequent occurrence and must have been met with by almost every general practitioner of much experience.[153] Cases of this description, caused by heart-clot, paralysis of the heart and apoplexy are readily explainable, but there remains a certain proportion of cases in which no gross anatomical lesion can be found to explain the untoward result, and which must, with our present knowledge, remain with the occult mysteries of nature.

A man aged 60, apparently in his usual health, went from camp to the city (three miles by train) one morning. At noon he was taken suddenly and violently ill at the house of a friend, and within two hours was sent to the City Hospital. The attending physician reported that he was received unconscious, cold extremities, rapid breathing, temperature 103, and almost moribund. He died within six hours of the attack. Autopsy revealed: lower right lobe passing into a stage of gray hepatization, . . . remainder of lungs deeply engorged.[154]

An intelligent man, aged 78, was the subject of

Med. Assoc., Nov. 28, 1885, p. 614; Valleix, Guide du med. prat. T. 11, p. 259; et al.

[136] See Fox, Op. cit. p. 206; Huss, Op. cit.; et al.

[137] Has no influence! Owen, N. Y. Med. Rec., Aug. 18, 1888, p. 183.

[138] See Copland, Med. Dic. N. Y., 1855, Vol. I; Drummond, Lancet, 1891, Vol. I, p. 647; Dusol, These de Paris, 1876; Fismer, Arch. f. k. Med., Bd. xi, 1873, S. 391; Flint, Prac. Med. Phila. 1868, p. 184; Foramel, Cin. Lan. and Clinic, Jan. 15, 1887, p. 86; Fox, Op. cit., p. 207; Gerhard, Dis. Chest, Phil., 1860, p. 202; Green, Quain's Dic. Med., p. 881; Huss, Op. cit., S. 129; Lepine, Op. cit., S. 160; Loomis, Pepper's Syst. Med., Phila., 1885, Vol. III; Peters, N. Y. Jour. Med., Vol. III, p. 335; Robb, Op. cit., p. 614; Smith, Guy's Hospt. Rpts., Vol. xliv, p. 59; Swett, Dis. Chest. N. Y., 1856, p. 87; Sturges, Pneumonia, London, 1876, p. 87; Watson, Prac. Phys., Phila., 1845, p. 384; et al.

[139] Op. cit., S. 139.

[140] Op. cit., S. 191.

[141] Op. cit., p. 881.

[142] Gerhard, Dis. Chest, Phila., 1860, p. 211, and Ziemssen, Pleuritis u. Pneumonie, Berlin 1862, S. 261, think that the seat and extent of the local affection exert no influence over the course of the disease.

[143] Andral, Med. Clin., Phila., 1843, Vol. II, page 205; Chomel, Op. cit., p. 296; Davis, N. W. Med. Jour., Vol. III, p. 429; Fox, Reynold's Syst. Med., Phila., 1880, Vol. II, p. 206; Green, Quain's Dic. Med., N. Y., 1884, p. 880; Krupp, in Chomel's Pneumonie, S. 25; Louis, Roch. sür effets de la saignee, p. 42; Robb, Jour. Am. Med. Assoc., Nov. 28, 1885, p. 614; Rilliet et Barthez, Mal. de la enf.; Scheel, Inaug. Dissert., Tüb., 1882, S. 26; Schuyler, N. Y. Med. Jour., May 14, 1887, p. 541; Todd, Brit. Med. Assoc. Jour., May 15, 1852, p. 483; Watson, Prac. Phys., Phila., 1845, p. 583; et. al.

[144] Collective Invest. Rec., London, 1884, Vol. II; Gerhard, Op. cit.; Ziemssen, Op. cit., S. 211.

[145] Ziemssen's Handb., Leipzig, 1877, Bd. V, Heft 2, S. 28.

[146] Inventum Novum, etc., Vien., 1761, sec. xxv.

[147] Op. cit. S. 296. See also Huss, Lungenentzündung, 1862.

[148] In Townsend and Coolidge's Trans. Am. Climat. Assoc., 1889, cases the fatality was, according to the seat of the inflammation, as follows: Right lung, entire, 74 cases, 39 fatal, 53%; right lung, lower lobe, 377 cases, 47 fatal, 14%; right lung, middle lobe, 19 cases, 4 fatal, 22%; right lung, upper, 105 cases, 25 fatal, 24%; Total 575 cases, 115 fatal, 20%. Left lung, entire, 39 cases, 26 fatal, 67%; left lung, lower lobe, 216 cases, 28 fatal, 13%; left lung, upper lobe, 31 cases, 7 fatal, 22%; total 286 cases, 61 fatal, 21.4%. Duplex 111 cases, 63 fatal, 57%.

[149] Chomel, Op. cit., S. 295; Fox, Op. cit., p. 206; Green, Op. cit., p. 881; Huss, Op. cit., S. 114; Martyn, London Lancet, N. Y., 1884, Vol. I, p. 533; Robb, Op. cit., p. 614; Smith, Guy's Hospit. Repts. Vol. xliv, p. 59; Todd, Op. cit., p. 483; et al.

[150] N. Y. Med. Jour., May 14, 1887, p. 541.

[151] These premises are opposed to my experience.

[152] Drummond, Lancet, 1891, Vol. I, p. 647; Fox, Op. cit., p. 206; Green, Op. cit., p. 88; Lépine, Op. cit., S. 18 u. 158; Pause, Lungenentzündung, Leipzig, 1861, S. 9; et al.

[153] See especially Chomel, Op. cit., S. 297; Huss, Op. cit.

chronic genito-urinary disease. He complained of colic at 5 P.M., and was given an enema. He continued restless until midnight when he called for the commode, arose, sank back into the bed and expired. The autopsy revealed inflammation of the base of the right lung.[155]

A large and well nourished man, aged 76, felt unwell for several days but was walking about, with a temperature of 99.5°; nothing wrong was discovered with the lungs upon examination. Next morning he was restless, had a temperature 100°, pulse 105, feeble, and respirations 28. Distress in epigastrium; no cough, but there was dullness over the lower two-thirds of the right lung, with very little air entering the part. An hour later he raised up, called the nurse and expired. The autopsy disclosed inflammation of nearly the whole of the right lung.[156]

A female, suffering from pneumonic fever, locally affecting the middle lobe of the right lung, was so little ill on the third day that she persisted in getting out of bed. This she did, dressed, walked across the room and fell dead.[157]

A man, aged 28, was "admitted with pneumonia of the lower lobe of the left lung. The attack was a slight one, and the patient improved rapidly. On the morning of the 16th day, as he returned from the bath room, he staggered and fell. He was picked up and put to bed, when he expired almost instantly." The autopsy showed the lower lobe of the left lung in a state of gray hepatization. Both lungs were œdematous.[158]

As shown in the last case, sudden death in pneumonic fever is not confined to the acute stages of the disease, but it may occur long after apparent convalescence has set in, and this too, irrespective of the character and severity of the attack.

In the autumn of 1875, I attended a little girl of 8 years, with a mild attack of pneumonic fever, the local lesion being confined to the base of the right lung. The disease pursued an ordinary, but mild course and defervescence by crisis occurred on the fifth day. For a week she remained tired and weak, but improved daily. Her cough had almost ceased, there was no dyspnœa and her appetite was good. One morning, exactly a week after the crisis, her mother came to her bedside, requested her to arise and asked what she desired for breakfast. The child not appearing at the table, the mother ten or fifteen minutes later returned to the bed chamber to find her child dead. It was supposed that she had attempted to arise and had instantly expired.[159]

A certain proportion of persons have hearts of very little stability and a trifling impediment to the heart's action may cause sudden alarming or fatal symptoms. It is this contingent which furnishes the majority of sudden deaths in pneumonic fever.

In estimating the chances of recovery in this disease the local lesions, general symptoms and the prevailing morbid influence should all be carefully considered. The omission of this cardinal principle by the medical attendant may be the cause of lamentable errors. A prognosis based upon general impressions is valuable, but a careful consideration of all the surrounding circumstances should not be neglected. In formulating an opinion individuality must always play an important part, as the prognosis in any individual case will vary from the average from an infinity of circumstances.

For this reason numerical calculations must always occupy a secondary place in estimating the fatality of this malady when an individual case is concerned. In this field there must be considered a multitudinous array of circumstances which cannot possibly be considered by the numerical method of calculating chances. Individual cases can only be estimated separately. If, however, we desire to estimate the average probable death rate we may safely invoke the aid of the doctrine of numerical chances, provided, always, that in making the calculation we employ practically infinite numbers.

163 State Street.

PIONEER CRANIECTOMY FOR RELIEF OF MENTAL IMBECILITY DUE TO PREMATURE SUTURAL CLOSURE AND MICROCEPHALUS.

BY L. C. LANE, M.D.,

PROFESSOR OF SURGERY COOPER MEDICAL COLLEGE, SAN FRANCISCO, CAL.

Early in the month of August, 1888, I received a letter from a lady residing in the interior of California, stating that she desired to consult me concerning her infant, then nearly 9 months of age, which presented signs of mental imbecility. At the time appointed for the consultation, the lady presented herself with her infant. The child, otherwise in good health and well nourished, was decidedly microcephalic. The cranium was symmetrical, and only deviated from normal type in the smallness of its volume. The mother stated that at birth the anterior fontanelle was wholly closed, and the posterior one nearly so.

The mother was especially solicitous to learn wheth-

134 Green, Op. cit., p. 882.
135 See Caton, Lancet, 1884, Vol. II., p. 136.
136 Ruenberg, Berliner. k. Wochenschr., 1888, S. 94; et al.
137 See Bennett, Restorative Treatment Pneumonia; Besnier, Thèse de Paris; Biach, Op. cit.; Brandes, Virchow's Archiv, bd. xv., S. 210; Doubleday, N. Y. Med. Rec., Mar. 28, 1885, p. 343; Dusol, Thèse de Paris, 1876; Flint, Med. News, Nov. 28, 1885, p. 605; Glasgow, St. Louis Cour. of Med., Mar. 1886, p. 195; Hartshorn, Med. News, Apr. 8, 1888; Huss, Op. cit.; Huxham, Epidem. Dis. London, 1748, p. 59; Juergensen, Op. cit.,; Lepine, Op. cit., S. 166; Moore, N. Y. Med. Rec., July 10, 1886, p. 57; Lawrence, London Lancet, N. Y., 1853, Vol. I, p. 73; Hyde, Med. News, Nov. 28, 1885, p. 605; Moxon, Lancet, 1884, Vol. I, p. 53; Rilliet et Barthez, Op. cit.,; Robb, Op. cit., p. 614; Sturges, Op. cit.; Swett, p. 87; Van Bibber, Jour. Am. Med. Assoc., July 28, 1888, p. 110; Ziemssen, Op. cit., S. 361.
138 See Landsberger, Inaug. Dissert. Berlin, 1887, S. 16; Lepine, Op. cit.; Leudet, Jour. med. del hotel Dieu de Rouen; Stortz, Inaug. Dissert., Wurzb., 1884, S. 51; et al.
139 See Huss, Op. cit., S. 80.
140 Glasgow, Op. cit., p. 195.
141 Arch. gèn. de med. 1810.
142 Op. cit., p. 206.
143 See Besnier, Op. cit.; Huss, Op. cit.,; Sestier, Chomel's Pneumonie, Leipzig, 1841; Stortz, Inaug. Dissert., Würzb., 1884.
144 Op. cit.
145 See also Reitz, Inaug. Dissert., Jena., 1868, S. 8.
146 The earliest, and, therefore, the most valuable sign of approaching death is an up and down movement of the trachea—anticipating alarming changes in the pulse and temperature. It is due to paresis of the intra-laryngeal muscles, and sounds the first note of alarm that the central nervous system is profoundly and irretrievably affected. See also Shrady, N. Y. Med. Rec., 1875, No. 230.
147 There are exceptions to this rule.
148 It seems that this is unnoticed by the patient himself.
149 N. Y. Med. Jour. Vol. xxvii, p. 68.
150 See also Cleghorn, Op. cit., S. 243; Dietl, Op. cit., S. 72; Doubleday, Op. cit. p. 343; Green, Op. cit., p. 878; Hermann, Op. cit., S. 22; Pause, Op. cit., S. 155; Rept. Bd. Health, D. C., 1878, p. 113; Stecher, Op. cit., S. 24; Stortz, Op. cit., S. 57; Sturges, Op. cit., p. 272; Swett, Op. cit., p. 85; Townsend and Coolidge, Op. cit.; Wunderlich, Inaug. Dissert., Tüb., 1858, S. 25; et al.
151 London Lancet, N. Y., 1864, Vol. xi, p. 616; See also Berens, Phil. Med. Times, Apr. 3, 1875.
152 Burns, N. Y. Med. Jour., Jan. 4, 1890, p. 17.
153 See also Ashton, London Lancet, N. Y., 1855, Vol. I, p. 260; Green, Op. cit., p. 878; Quain, London Lancet, N. Y., 1855, Vol. I, p. 260.
154 Patton, Jour. Am. Med. Assoc., Oct. 16, 1886, p. 427.
155 Patton, Op. cit.
156 Patton, Op. cit.
157 Ewens, Lancet, 1890, Vol xi, p. 682.
158 U. S. Marine Hospt. Repts., 1883, p. 242.
159 See for other cases Biggs, N. Y. Med Rec. July 21, 1888, p. 77; Cruveillier, Path. Anat. Liv. xxix; Fox, Op. cit. p. 183; Heale, London Lancet, N. Y., 1853, Vol. I, p. 64; Lesser, Berliner k. Wochenschr., 1888, S. 305; Maschka, Ibid. S. 305; et al.

er the child's brain was otherwise healthy; and on being assured that there were no evidences to the contrary, she asked if an operation were not possible, whereby the brain could enlarge; or, in her own remarkable words, she said, "Can you not unlock my poor child's brain and let it grow?" I replied that such an operation had never been done, and if performed, it would be purely an experiment. I said further, that it would be perilous, and might end fatally, and that before the operation was adventured, she had better return home and maturely reflect on the matter. She did so, and at the end of three weeks returned, and said that she desired to have the operation performed.

The infant was operated on, the 28th of August, 1888, in the presence and with the assistance of Dr. R. H. Plummer, Professor of Anatomy in Cooper Medical College, and Dr. Chas. E. Farnum, Demonstrator of Anatomy. The triple anæsthetic A. C. E. was used; yet it acted badly. The incision was made through the scalp, in the sagittal plane, from the forehead to the occiput, and the scalp next being reflected laterally, an opening was made with a small trephine in the summit of the frontal bone, on each side of the superior longitudinal sinus. Through these openings, strong blunt scissors were introduced, and each parietal bone divided antero-posteriorly. The median strip of bone, which was an inch broad, and extended from the anterior to the posterior fontanelle, was easily uplifted and removed by the aid of a blunt dissector. There were next removed, on each side, sections of the remaining parietal bones; so that the excised spaces, in totality, resembled a cross, of which the arms were of equal length and breadth. In this parietal osteotomy, the underlying dura mater was separated from the bone, and protected from the cutting scissors, by the blunt dissector. There was but slight hæmorrhage, and the wound was closed by metallic sutures.

The child lived but fourteen hours after the operation, and death was clearly due, in a great measure, to the prostrating effect of the anæsthetic, which, at the onset, induced a cyanosis from which the child never rallied.

Thus, as seen, craniectomy, which is on trial as a means of relieving infantile dementia arising from premature sutural synostosis and concurrent microcephalus, was due to the inspiration of maternal affection; to a mother's thought, reaching out into the region of the untried and unknown, in search of relief for her unfortunate offspring.

A second craniectomy, performed by the writer some months ago, on an imbecile microcephalic infant, in which the exsected space resembled a letter H, has been crowned with better results: the child lives, and gives unequivocal evidence of mental improvement.

As just said, craniectomy is on trial, and though the surgeon's knife may "unlock the brain," it remains for futurity to determine how far his work will remove the penumbral shadow which microcephalus casts on infantile mentality.

IS DENTISTRY A DANGEROUS PROFESSION?—Dr. Buxton, in the *Dental Record*, asserts that dentists suffer to an unusual degree from neurasthenia, nervous debility, migraine, sciatica, herpes zoster, insomnia, etc. He attributes this to confinement, over-work and bad air.

BOOK REVIEWS.

CALENDAR OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND. London: Taylor and Francis, 1891. Price one shilling.

This is a model report or annual embracing over 370 pages. It is clearly printed and stoutly bound as all such handbooks should be. The lists given by the Secretary of the College for July 9, 1891, contain the names of 1111 Fellows and of 16,622 members then living; these lists occupy 170 pages. The report of the Conservator of the Hunterian Museum shows important additions to the teratological and anatomical departments. During the year the president, Mr. Thomas Bryant, gave thirty-nine models illustrative of human anatomy, made by the late Mr. Towne of Guy's Hospital. Another unusual contribution is catalogued as native instruments, used in India, in operating for cataract.

RAILWAY INJURIES IN THEIR MEDICO-LEGAL AND CLINICAL ASPECTS. By HERBERT W. PAGE, M. A., F. R. C. S., Surgeon to St. Mary's Hospital. London: Charles Griffin & Co. 1891.

This is a well written book on a subject that has not been overdone. The work is dedicated to Professor Charcot, who has contributed so freely to the elucidation of nervous railway problems. Mr. Page's point of view is, for the most part, that of the railway surgeon, but he aims to be fair and judicial, although always demanding good clinical testimony as to actual lesion of the cord or nervous system before admitting the latter to be the case. The author inveighs warmly against frequent examinations of the back of a person alleged to be suffering from spinal injury, for a repeated handling of the part is the very way to awaken undue nervousness and a hyperæsthesia that is often most distressing. The patient is thus oftentimes made worse and the diagnosis befogged.

NECROLOGY.

William H. Long, M.D.

Surgeon Wm. H. Long, of the U. S. Marine Hospital Service, died at the Marine Hospital, Cincinnati, O., January 5, 1892. Dr. Long was a native of Kentucky, and served as a medical officer of the Kentucky Volunteers during the latter period of the late war of the Rebellion. In 1875 he was appointed an Assistant Surgeon and stationed at the U. S. Marine Hospital at Louisville. He was promoted to be a surgeon, while serving at that station, and subsequently commanded the marine hospitals at Detroit, Chicago, and Cincinnati. He was an officer of fine executive ability, and an excellent operator; his herniotomy record being second to none in the service.

In person he was very tall, being six feet and four inches in height, and he was a man of the most charming and genial manners. His wife died only a few months since, and he leaves two minor children; son and a daughter.

Dr. Long leaves many sincere mourners, not only in his own corps, but in the medical profession at large, among whom he was widely and favorably known.

DR. FRANK DONALDSON, of Baltimore, died December 9, of renal disease. He was the well-known professor of laryngology in the University of Maryland. He was a native of Baltimore, in 1823, and was educated in that city and in Paris. He was a lecturer in the College of Pharmacy, and in the University medical department for nearly thirty years. He had been for many years the medical referee of the Mutual Life Insurance company and examiner for other corporations. He was the author of numerous physiological and special contributions to both home and foreign journals.

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SATURDAY, JANUARY 9, 1892.

BACTERIUM COLI COMMUNE.

This microörganism, originally described by ESCHERICH in 1884, has recently been the subject of much investigation by the French, and although some differences of opinion exist, it seems about to take a somewhat prominent position in pathogenesis. It is a constant inhabitant of the colon, and is particularly prominent in the stools of healthy breast-fed infants. In 1890 RODET and ROUX announced that the EBERTH bacillus, the supposed cause of typhoid fever, was identical with the bacterium coli commune. This view was strenuously opposed by CHANTEMESSE and WIDAL, in a communication to the Paris Academie de Medicine.[1] Whatever be the merits of this controversy, certain other observations have been made, and not denied, which indicate that this bacillus has a wide range of pathological influence.

CHANTEMESSE, WIDAL and LEGRY, in a recent communication,[2] record two of their own observations. In the first case, an old man dying in the algid stage of what was apparently cholera nostras, presented at the autopsy, made a few hours after death, some unimportant changes in the bowels, a normal spleen, and small and soft liver and kidneys. Parenchymatous cultures remained sterile, but in the fæces, the peritoneum, and the bile, the bacterium coli commune was found. The second case was a woman, who developed intestinal obstruction, with symptoms of peritonitis, in the fourth month of her pregnancy. A retroversion of the uterus was corrected with resulting improvement in the condition, but abortion followed, and in two days more fever reappeared. In the fetid clots removed from the uterus, the bacterium colico mmune, or the coli-bacillus, as the reporters prefer to call it, was found to exist in a state of pure culture. At the autopsy, adhesion of the intestine to the uterus and a peritoneal abscess were found. In the pus, the blood of the heart, in the uterus, etc., the coli-bacillus was found in a state of purity. There were no marked lesions of Peyer's patches. CLADO and LARUELLE have found that this bacillus is capable of traversing the intestinal wall in cases of strangulated hernia, and in all such cases examined by them, it was found in the liquid of the sac, the peritoneal and pleural fluids, in the blood, and in the organs.

This microörganism may invade the biliary passages and produce either a cholecystitis, or a suppurative angiocholitis or even hepatic abscess. It may pass even farther and produce an abscess of the thyroid body.

These authors believe that the greater number of the cases of suppurative meningitis recently published and ascribed to pseudo-typhoid bacilli, are really due to infection by the coli-bacillus. Early last December, SEVESTRE and GASTON reported to the Societe Medicale des Hopitaux, a case of meningitis caused by the coli-bacillus. These others have isolated a germ having all the characteristics of the coli-bacillus, from two cases of empyema.

The cholera bacillus is not found outside of the intestines, but the bacillus found by EMMERICH in the blood and organs of patients dead of cholera has been identified by WEISSER as the coli-bacillus. Intestinal lesions, no doubt, favor the transmission of this germ to distant tissues.

At the session of the Societe de Biologie, of December 12, 1891, ACHARD and RENAULT[3] reported that they had found in the kidneys of a pregnant woman, attacked with nephritis, a bacillus which presented all the characteristics of the coli-bacillus. The conditions were such as to exclude the hypothesis of the post-mortem penetration of the microbe into the organs. They then sought to discover the relations of the coli-bacillus to the bacterium pyogenes, to which is attributed the greater part of the cases of urinary infection, and concluded that the two bacilli were identical. At the conclusion of this report, M. STRAUS stated that he had just received from DR. KROGIUS, of Helsingfors, a paper, as yet unpublished, in which he says: "The microörganism which I have met most frequently in urinary patients, and which I hold is identical with the bacterium pyogenes of ALBARRAN and CLADO, is nothing else than the bacterium coli commune."

The most interesting, perhaps, of all the recent observations relating to the coli-bacillus are those of DR. ADENOT,[4] of Lyon. In the laboratory of ARLOING, of Lyon, he examined five cases of appendicitis, bacteriologically. Control examinations were made by RODET. In three cases the pus of the abscesses contained the coli-bacillus in pure culture, and in two of these the appendix was intact, that is, no macroscopic perforation had occurred. In the fourth case,

[1] Oct. 13, 1891.
[2] Le Bulletin Medical, Dec. 13, 1891, p. 1139.
[3] La Semaine Medicale, Dec. 16, 1891, p. 491.
[4] Gazette Medicale de Paris, Dec. 5, 1891, p. 580.

the pus was found to contain two bacilli, the coli-bacillus and the staphylococcus pyogenes aureus. No autopsy was obtained in the case, which seemed to be further complicated by tuberculosis of the intestines. The fifth case is peculiarly suggestive. An early operation revealed an enlarged appendix, but no peritoneal pus. After ligation, the appendix was excised; its mucous surface was red, and covered with thick, glairy mucus. In the center of the appendix was a hard, stercoraceous calculus, about the size of a grain of wheat. The mucous exudate was removed with care, and gave pure cultures of the coli-bacillus.

None of these observations can be considered conclusive; in fact, the wide field of action of the coli-bacillus, here implied, is of itself suggestive of some error. It is not at all certain that the same, and all means for recognizing the coli-bacillus, were employed by the different investigators, and it is by no means certain that they all were working with the same microörganism.

The very suggestive results make a strong appeal for further research, but speculation is, as yet, out of place.

RECOVERY OF A LOST INTUBATION TUBE.—We find in the *Boston Medical and Surgical Journal*, for December 3, a paragraph which describes the manner in which electricity was made serviceable for the detection and recovery of a lost intubation tube. A child between two and three years of age, suffering from croup, underwent the operation of intubation with success, but when the surgeon, Dr. J. Mount Bleyer, went to remove the tube, the latter could not be found. In the hope that the tube might be retained in the upper air passages, he resorted to the use of a telephonic test to locate the position of the tube. A metallic probe was attached to an electric wire which terminated in a telephonic receiver; this probe was passed down through the larynx and when it touched the lost tube a distinct click was communicated to the ear through the receiver. In this manner the distance below the larynx was measured off, and the proper location for the performance of a tracheotomy was determined. The operation was made and the tube extracted; the child survived and at last accounts was on the road to recovery.

"FASTING" EXHIBITIONS CONDEMNED.—The verdict of the coroner's jury of New York City in the case of the death of Stratton, the "faster," is worthy of commendation. That decision recites that the so-called "fasting exhibitions are to be regarded as demoralizing and criminal, and they should be prohibited by legal enactment." The duration of this unfortunate starved being's alleged fast was forty-one days.

AN IMPORTANT DECISION.

In 1885 a Mr. Hartt, who had been a patient at the New York Hospital, brought suit against that institution for alleged ill-result following an operation performed upon him by Dr. W. T. Bull, one of the surgeons to the hospital. This suit was tried before Judge Barnard and a jury at White Plains, the question being as to whether the surgeon had performed the operation skilfully or not. A verdict was rendered in favor of the hospital.

During the past year the plaintiff brought another suit, on the same grounds, against Dr. Bull. This suit came before Judge Morgan J. O'Brien, last week, the defendant's counsel, Mr. Austen G. Fox, putting in the plea that as the suit had already been brought against the hospital, and had failed, the plaintiff had no standing in court, his case having been finally disposed of.

In this view the Judge concurred, rendering the following decision:

"It seems to me that, upon the facts as they are now presented, the action made by counsel for the defendant for a direction of a verdict in his favor should be granted.

"The action was originally brought against the New York Hospital for the alleged negligence of one of its doctors. The question then at issue was fairly and fully presented during the trial of the case as to the negligence of the doctor, and upon that there has been an adjudication in favor of the hospital.

"It seems to me upon every principle that it is in the interest of justice, and in accordance with public policy, that after a man has had his day in court, and has been granted and accorded every opportunity of fully and fairly presenting his case, and after he has made his election and tried his case, that he should not be allowed to come in court and try the same question over again.

"Concededly, the liability of the hospital in that case, if it was a liability at all, was a derivative one, being a legal liability resulting from the fact that it had connected with this hospital this doctor, the defendant in this case, no matter on what theory, whether upon the doctrine of election, or whether privy or party to the act or not.

"Besides, putting the matter on the broad ground of public policy, the whole purpose and policy of the law is to put an end to litigation, and this is one of the cases to which that principle should be applied, namely, that when once a man has had his day in court, and had an opportunity of fully and fairly presenting the question at issue, he should not be allowed a second trial for the purpose of presenting the same question to the consideration of the jury.

"The question is a new one in this State. It has been passed upon in other States, but the precise question has not been passed upon here.

"I will direct a verdict for the defendant and require the exceptions to be heard in the first instance at General Term."

Let us see what might result in case a different view had been taken. Given a case in which, during the absence of the regularly appointed surgeon to a hospital, and the tenancy of a *locum tenens*, an operation is performed by one of the house-surgeon's assistants with unfavorable result.

The patient brings suit against the hospital corporation, and failing, sues the attending surgeon. Unsuccessful in this, he sues the *locum tenens* as representative of the surgeon. Then, in turn, the house-surgeon and the latter's assistant.

The same case would go before successive juries, each time upon the same merits, but with a different defendant. The inconvenience and expense at which the hospital and its surgeons would be placed can well be imagined.

It is a principle in law that in failure of an action against the master for the act of a servant the same suit cannot be brought against the servant. Judge O'Brien, in his decision, looks upon the hospital as the master, and its medical officers as its servants. The man who pleads malpractice must elect whom he will proceed against, and must abide by the result of that trial.—*U. S. Med. Record.*

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

First Annual Meeting of the American Electro-therapeutic Association, held in Philadelphia, September 24, 25 and 26, 1891.

(*Continued from page 21.*)

MORNING SESSION, SEPTEMBER 25, 1891.

The meeting was called to order at 10:20, with President Massey in the chair.

J. H. Kellogg, M.D., of Battle Creek, Mich., read a paper entitled

SUMMARY OF MY PERSONAL EXPERIENCE WITH ELECTROLYSIS IN THE TREATMENT OF FIBROID TUMORS.

I have treated in all between eighty and ninety cases. Have summarized the results in sixty cases.

Of these sixty cases, four were not treated a sufficient length of time to give the treatment a fair trial. Nine cases were made worse, or not much benefited. One of these was a soft myoma, which does not yield satisfactory results from this treatment. In five cases, the tumor was not diminished in size, but other symptoms were considerably relieved. In eleven cases, the tumor was not diminished, but the other symptoms, pain, weight, etc., entirely disappeared. In seventeen cases, the tumor was considerably diminished and the patient restored to good health. In fourteen cases, the tumor disappeared entirely, or became barely perceptible.

From a study of these cases, I found thirty-two were interstitial, nine subperitoneal, and fifteen subperitoneal and interstitial. The results in these several classes were as follows:

Of the thirty-two interstitial tumors, in nine cases the tumor was diminished in size and other symptoms cured. In six cases the tumor was not diminished in size, but the other symptoms disappeared. In nine cases the tumor was not diminished, but other symptoms were in part relieved. In the fourteen cases which comprised all the cases completely cured, both the tumor and the symptoms disappeared.

In the nine cases of subperitoneal growths, four were not benefited, or made worse. In one case there was slight benefit, in two, other symptoms were relieved, but the tumor was not reduced in size, and in two, the tumor was reduced in size, and other symptoms wholly relieved.

In the fifteen cases in which the tumor was both subperitoneal and interstitial, five cases were a complete failure, one slightly benefited, four relieved of symptoms without reduction of tumor, and in five, there was reduction of tumor and cure of other symptoms.

From these statistics, it appears that the cases of fibroid most benefited by electrolysis, are cases in which the growths are interstitial. Those next to have the growth benefited, are interstitial and subperitoneal. Those least benefited, are subperitoneal. Those most amenable to treatment are submucous, but of this class no well-defined cases have come under my observation.

I have arranged a table, which presents the results in fifty-six cases, according to which it appears that of the cases of interstitial fibroid, 43.7 per cent. were cured, while all were benefited and none made worse. Of the other varieties, none were absolutely cured, and in the cases of subperitoneal growths, 44.4 per cent. were either not benefited, or made worse, and of the subperitoneal and interstitial, 33.3 per cent. of the cases fall in the same category.

It having occurred to me that the age of the patient might be a factor of some importance, I made a study of my cases from this standpoint, and found that of the fourteen cases in which no material results were accomplished, 78.7 per cent. of the patients were under 40, and 42.7 per cent. did not exceed 35. In cases of fibroid tumor in which other symptoms were cured, but in which the tumor was not diminished in size, the average age was 43.7 years. Cases in which the tumor was considerably diminished and the patient restored to good health, averaged 40. The fourteen cases in which the tumor entirely disappeared or became barely perceptible, had an average age of 37.9 years.

In the earnest discussion of the proper method of treating fibroids, which has been going on between electricians and surgeons, many unfair positions have been assumed, and it seems to me that both sides have taken extreme grounds. There are, unquestionably, cases of fibroids which may be satisfactorily treated by electrolysis, and other cases which are fit subjects for the surgeon. There is still another class in which the patient herself, or special circumstances, must decide which mode of treatment shall be adopted. In my opinion, electrolysis may be properly employed, and with expectation of success:

1. In cases of small or moderate-sized tumors.
2. In interstitial growths of any size.
3. For relief of hæmorrhage and pain in any class of tumors.
4. As a means of expediting the climacteric change in any class of cases in which the application is well borne.

Cases should be subject to surgical treatment, either removal of the appendages or hysterectomy:

1. In cases of very large tumors, which have resisted the application of electrolysis for a reasonable length of time, and in which there is an uncontrolled hæmorrhagic tendency. The hard multi-nodular fibroids are most likely to be benefited by this operation.
2. In suppurating tubes, or a seriously diseased condition of the appendages.
3. Hysterectomy is the only remedy in cases of soft œdematous myoma.

I have operated for removal of the appendages in ten or twelve cases of this sort; have performed hysterectomy in six cases, and removed pedunculated, subperitoneal fibroid tumors in four cases. Have had one death, from removal of the appendages, in which case the patient was very low before operation, having pulse of 160. Have had but one death from removal of an enormous, soft œdematous myoma, weighing 40 lbs., in an aged woman. The patient rallied well from the operation, but the tumor had been grown fast to the anterior wall of the abdomen for so long a time that very vascular connections had been established, so that the return flow of blood from the tumor was chiefly through the abdominal wall. After removal of the tumor very extensive, serous oozing occurred, and the patient died twenty-four hours after operation, apparently from serous hæmorrhage. Several quarts of serum were found in the peritoneal cavity at the post-mortem examination.

As regards to the safety of the three methods of treatment proposed—hysterectomy, ovariotomy and electrolysis—it must be conceded that electrolysis is a much less formidable operation than ovariotomy or hysterectomy. To get good results from electrolysis it is necessary to observe the most scrupulous care, not only in the application of the electrical current, but in the after management of the patient.

When gynecologists send patients off to their homes on a street car, in a carriage, or on a railway train, a distance of two to twenty miles, after the application of 100 to 300 milliampères of current, it must not be a matter of surprise that now and then bad results are experienced. It is my custom to send patients to bed for twenty-four hours after each application of the current.

Another cause of failure in the employment of electrolysis, is neglect to use such other means as are known to be serviceable in the management of these cases. I do not think it the duty of the surgeon to neglect to employ for his patient whatever remedy he believes may be beneficial,simply for the purpose of enabling him to differentiate more exactly the results of his therapeutic efforts. I have met a number of cases in which the hæmorrhage, while not readily controlled by electrolysis, speedily yielded when ergot in efficient doses was added, although previously the employment of ergot had been ineffectual. I have employed hydrastis with success in similar cases, and also invariably resort to the use of hot vaginal douching, employing alum and other astringents both with the douche and the tampon.

In hæmorrhage cases, I invariably begin by thorough curetting of the endometrium, which enables me to secure much more marked and immediate results than if the electrolysis alone is employed. I find also that by this means the disposition to increase of hæmorrhage, which is often noticeable at first when electrolysis is employed alone, is wholly avoided.

The hygiene of the patient, and all measures calculated to improve the general health, must receive careful attention.

In the study of the action of the electrical current, I have become more and more satisfied that its chief curative action in these cases is through its cauterizing effect upon the endometrium. The benefit often obtainable in these cases by thorough curetting has long been recognized. Electrolysis accomplishes the same results, not so rapidly, but more efficiently, in that its action penetrates the uterine tissues to a greater or less extent, according to the strength and the duration of the application. In one case a tumor, which reached nearly to the epigastrium, of many years' standing, diminished more than one-half in size within three months as the result of two or three applications of the current. After the third application, in which a current of a little more than 300 milliampères was employed, the patient suffered a severe attack of phlebitis, not only in the tumor, but extending into one limb. For several days the patient was so ill, I despaired of her life. She made a good recovery, however, and is well to-day.

Several other similar experiences, in which the symptoms were not so violent, however, together with the fact that the greatest improvement noticeable is in cases of sub-mucous and interstitial fibroids, have convinced me that the current acts chiefly through its polar, rather than by any subtle interpolar action. Interpolar action of the current must, necessarily, be transitory, whereas, the destruction of tissue produced by the cauterizing action of the positive pole which I use exclusively in the treatment of this class of cases, is something tangible, efficient and permanent in character, as the result of which blood-vessels are plugged by coagulation, and afterwards permanently closed by cicatrization, and thus the nutrition of the morbid growth materially lessened. My constant observation has been that a tumor, to be benefited by electrolysis, must be of such a nature and located in such a manner as to be influenced by an impression upon its vascular supply, such as described.

Dr. H. E. Hayd, of Buffalo, N. Y., read a paper entitled

TWO CASES OF FIBROIDS WHERE ELECTRICITY CEASED TO CONTROL HÆMORRHAGE AFTER A TIME, ALTHOUGH EMINENTLY SATISFACTORY AT FIRST,

Mr. President and Gentlemen:—I propose to report to you two cases, interesting from a clinical therapeutic standpoint; cases in which the manifestations of well directed treatment were at first eminently satisfactory, but finally the symptoms at first so speedily relieved, were by each subsequent treatment dangerously aggravated.

Mrs. L., æt. 49, had two children and six miscarriages. Last pregnancy nine years ago—baby full term—no history of syphilis. Large intra-mural fibroid filling up pelvis, immovable, with a smaller nodule posteriorly and inferiorly obliterating the lumen of the rectum and pushing the vaginal wall downward and forward. Swelling extends three and one half inches above the pubes. Pain and tenderness in iliac region and over pubes upon pressure. Sound entered $4\frac{1}{2}$ inches, curve posteriorly. Tissues firm and resisting to deep pressure upon digital examination, with fulness and swelling in both broad ligaments.

History:—For several years menstrual periods have varied in amount, but for the past two years, and particularly for the last nine months, the flow has been excessive. Attacks of hæmorrhage—continuous—lasting for days and even weeks have occurred from time to time, and on one occasion the patient remained in bed for two months. She used various medicines and had numerous local applications by her physicians, also applied ice in the vagina and over the lower abdominal region. Bowels of late very constipated, in fact, a natural movement has been impossible for months and even an enema brings little or no return. Locomotion much impeded on account of the resulting pains in the left hip and side and extending into the back. Bladder symptoms very annoying and often distressing urgency. I was called to see the patient in January, 1891, and found her in bed, where she had been for eighteen days, flowing considerably, with all the symptoms of anæmia well marked, and the physical prostration very great. An injection of sweet oil and glycerine was given, and subsequently soap and water, and with the aid of the fingers a most prodigious evacuation resulted. A vaginal injection, corrosive sublimate 1-3000, was given, after which, positive intra-uterine galvanism administered 60 ma. for seven minutes. The hæmorrhage was at once controlled. The galvanic application was again made in three days, when it was found that the hæmorrhage had practically ceased. The patient was very sensitive to electricity and complained a good deal, yet not sufficient to make me anticipate any possible complication. These treatments were continued every third day for a month, when the patient was enabled to come to my office. After three months treatment a very appreciable diminution in the size of the tumor had taken place, especially in the smaller mass, which had practically disappeared. The bowels were moving naturally, there was no bladder precipitancy, the pain on locomotion has passed away and the general physical condition excellent, with a gain of twenty-seven pounds. The menses appeared with regularity, the loss was normal in amount. After four months regular bi-weekly treatments, and once a week for another month averaging from 60 to 75 ma. for seven to ten minutes, it was thought that the treatments might be discontinued. To my surprise she returned at once complaining of a little hæmorrhage after the last treatment, and slight pain. Upon examination no tenderness was evident and no reason could be given for this untoward complication. Another positive intra-uterine application was given. Hæmorrhage, but increased in amount, was again complained of. The patient was directed to go home, get to her bed, and then I should try another treatment, but to my surprise, the hæmorrhage was again aggravated and continued quite copiously for three days. What was to be done, and what was responsible for this condition, were two questions which were seriously presented to my mind. Was the endometritis, even after such a long course of

treatment at fault by means of excessive granulation, if so the os was to be dilated at once and the uterus thoroughly curretted; or did the uterus and ovaries rebel against the irritative influence of the long continued galvanic current and thus keep up the flow. I thought this a possible explanation and forthwith swabbed the womb with Lig. Ferri per chlor., and administered Pot. Brom. grs. xxx with the happy effect of completely arresting all hæmorrhage after a few applications, which satisfactory condition has continued for three months, and, in the meantime, the periods have come with regularity and have caused no trouble.

Bridget M., aged 48, single, seamstress. Intramural fibroid size of orange. Womb movable but restricted by slight adhesions on right side and posteriorly. Tissues soft and relaxed, sound four inches. Patient had been flowing for five weeks and for the last ten days was compelled to take to her bed and use, while in the recumbent position, eight to ten napkins a day. General condition that of extreme weakness with dizziness, headache, palpitation, etc., etc. Positive intra-uterine galvanism, 75 ma., was given for seven minutes. The hæmorrhage had practically ceased at my next visit on the following day. On the third day another application was made, and so on bi-weekly, with the most satisfactory expectations. Patient at once increased in flesh and strength, and in the course of a few weeks came to my office for treatment. The next period came in five weeks and lasted two days—no other menstrual period came for three months, making me anticipate an artificial menopause. The patient showed great tolerance for the electrical current, and complained but very little even with 125 ma., consequently from 100 to 125 ma. were invariably given. All went well, and treatment was discontinued after the fourth month; the womb had reduced one-third in size, and all evidence of trouble at rest. One day while lifting a heavy carpet the patient felt something give way and soon noticed a little blood and presented herself at once for treatment. Positive galvanism 75 ma. with great care was given and like in the previous case, it provoked the bleeding. On the third day the patient returned and another treatment was given and the vagina was thoroughly tamponed with cotton sprinkled with iodoform. The hæmorrhage was aggravated and continued to be provoked after each treatment, until the electricity was abandoned and the womb was thoroughly swabbed with tinct. iodine—Churchill—and immediately the hæmorrhages stopped and it has ceased to be a feature in the case for the past four months. The condition of the patient is excellent.

These two cases are interesting in that they show how quickly dangerous and fatal hæmorrhages were controlled by positive galvanism after many other forms of treatment had been consecutively tried. Moreover they suggest to our minds the possibility of electrical satiety, in which a condition is brought about when, after long and continuous electrical applications, symptoms at first relieved were provoked and aggravated by its subsequent employment. Whether this is done by tearing out reflex muscular contractile parts, or by ceasing to promote a permanent eschar on account of certain degenerative changes in the tissues previously influenced by this agent, or by irritating the ovaries, or even pre-existing adhesions— as suggested by Coe as perhaps a cause of obscure hæmorrhage, is difficult to answer. They are also interesting in that they present a certain condition of tissue, perhaps brought about by electrical stimulation, and decomposition, which permitted simple measures to act favorably when previously they had no salutary influence. Moreover, they impress upon the surgeon's mind the necessity of an expectant treatment, in women at the menopause in life, and a frequent recourse to various medicines, which may at one time fail, but after a certain period, and after the influence of other treatments, be of signal service.

Let me conclude by saying that these two cases are two out of a series of eleven cases of fibrous tumor in which the others were satisfactorily treated by the Apostoli method.

Dr. Goelet: I have had considerable experience with this method, and experience in very severe cases of this character. I feel called upon to answer some of the questions by Dr. Hayd, as put forth in regard to his failure to obtain results in his treatment. I am unable to agree with him that there is such a thing as the patient becoming saturated with electricity. I believe that these failures can be explained.

I have stood by the side of Apostoli, and handed him his electrode until I would get one the size of an orange, when I thought he would not be able to get even a medium-sized one in. You must understand that the cavity of the uterus is much larger than the cervical canal, and for producing a chemical galvano-caustic action upon the endometrium, you must have contact with the whole surface. I do not find fault with Dr. Hayd's technique, but I simply give some of the outlines of the difficulties of treatment, though I suppose he used as large an electrode as possible. I simply desire to show how some difficult cases may be handled.

My plan has been to dilate the cervical canal so that I could get a carbon electrode in the endometrium which would be in contact with the whole surface. Another point is, that in almost all these cases of fibroid we have endometritis, and this means an increase of the catarrhal discharge. I think that this offers a protection to the uterus which prevents the action upon the diseased surface, and this you must get rid of, and dilatation itself to a certain extent does so, as it permits it to drain, but not in every instance, and I have sometimes turned on the negative current to dissolve the secretions, so that I would be able to make better contact with the diseased surface. In sensitive patients you must not use too strong doses, and I do not think 75 milliampères sufficient to start hæmorrhage. I administer a mild anæsthetic, usually chloroform, for a few minutes. I do not think it wise to continue the application of electricity too long, and if you apply electricity in three sections of three minutes each, or nine minutes altogether, and by giving a mild anæsthetic, you can use 250 to 300 milliampères, and you must push the agent, and you will succeed, and not fail.

I call to mind one very serious case of hæmorrhage similar to that of Dr. Hayd; it was very persistent, and 100 milliampères would not control it. I used 150 milliampères, and I finally controlled it, and the patient's menstruation has been normal ever since.

I think that dilating the cervix first, so as to allow the passage of a sufficiently large electrode, is necessary. I suppose you all know what a sectional electrode is. It is a carbon bar which takes in one inch of surface at a time. Another point: I believe, in some cases, we should curette the cavity first. If you curette, so that the electrode can come in contact with a diseased surface, and get an eschar, you can control hæmorrhage. In intramural fibroids, you do not know how much is in the uterus, and you do not know whether you get the sound through to the fundus or not. If you fail to come in contact with any portion of the canal, you leave that part to bleed.

Dr. Bigelow: I do not know that I have ever seen a tumor, a bleeding myoma, which did not yield to the current. I have seen some very bad cases which persisted after several applications, and in most of these cases the cervical canal is pretty well dilated, and then, too, the electrodes themselves may serve as dilators. I show you a set of Apostoli's points, made by Flemming, and you can get them in gradually. Sometimes the whole endometrium seems to be embraced, and yet the bleeding proceeds, and I think these

cases are either in tumors where they have a very active and superficial blood supply, or where they are too dense. In those cases, I saw Apostoli commence with an enormous negative current. I think Dr. Goelet is very proper in commencing with the negative current, and I remember a case of Apostoli, in which he applied 125 milliampères, negative, and she came again and he again applied it, and then applied the positive, and it stopped. If the bleeding resists both the negative and positive current, I think I should puncture immediately. In this case, finally, the size of the tumor was reduced very much, it was finally punctured, and they did her a great deal of good. In a persistent bleeding that does not yield to the positive or negative current, I should puncture.

Dr. Walling: I have a letter from a correspondent who sends this curette, made of a loop of platinum wire, which he uses attached to the positive pole of a galvanic current during the operation of curetting. He claims that both applications can thus be performed simultaneously.

Dr. Goelet: I have had gynecologists say to me that it is impossible to control uterine hæmorrhage with electricity, and they have told me that they were sure that they were making the applications correctly, and that they touched all parts of the uterus and moved it over the entire surface. The trouble was that they did not keep it long enough in one place to produce cauterization.

Dr. Morton: I have but little experience in gynecological practice, not sufficient to speak with authority; but as to the question of the operative procedures, I have done enough to get an idea or two, especially as to general ideas of polar action, which are equally applicable to gynecological as to other operations. What holds true once will again. The same query put in the case of cancer may properly be put to the gynecologist: How much of this action is due to the chemical products of the positive pole, and how much is due to the galvanic action pure and simple? I would not ask the question except that I hold it is correct to use the curette. I put the question this way: Have the gynecologists not known hæmorrhage to be arrested by the application of the clay ball electrode? I have twice in six weeks, while on my country vacation, used it. A lady whom I had known in the city came to me with a long history of successive menorrhagical attacks, and begged to have electricity applied. I did not want to go into business on my vacation, nor did I want to begin intra-uterine treatment, which I do not feel competent to make, as my special treatment is percutaneous; however, I sent to New York and ordered a thirty-celled battery and clay ball electrode. I made an intra-vaginal application of the electrode, with happy effect. Not only did the hæmorrhage cease, but a large growth in the left groin, which had been pronounced by an expert to be a fibroid tumor, diminished in size, and in three weeks the lady was well enough to drive about and walk and pursue her daily vocations. Whether it was a fibroid or not, I don't know; I don't think it was, however, but it was a very hard tumor. I do not care to go into the question of fibroids now, but by simply calling attention to the case I wish to ask whether there may not be something due to the galvanic effects, pure and simple, as well as to the chemical effects, which are practically surgical effects. If we get good results from our applications, and hæmorrhage can be arrested by the galvanic effect without the chemical, then the gentleman who used the galvanic curette may be correct, and I ask the gynecological gentlemen if they won't clear up the question a little more. I used 50 milliamperes in my case.

Dr. Nunn: It has occurred to me to ask two or three questions in this connection. Of course, all of us who have much gynecological practice must have used, if we keep up with the times, galvanic treatment one way or another, and there must be a difference between the individual and the opinions of each one who brings a certain amount of personal experience. While I do not claim the immense experience of the metropolis, I can claim something as a country practitioner. The question that occurs to me is this: Were the indications for the constant application of the positive pole? The gentleman said he applied the positive pole three times in succession. That is contrary to my practice. I simply want an explanation why.

I first use the positive to arrest the flow, after that I use the percutaneous method, applying the negative. But I do not see the scientific necessity for cauterization after the cessation of the hæmorrhage. Every time you cauterize, you make an eschar deeper and deeper, and after a while the eschar comes off and you have the hæmorrhage, so that after the hæmorrhage has ceased I do not use the current again.

Dr. Cleaves: I only want to say in connection with what Dr. Morton has said, that during the past winter I had a case of fibroid tumor in which there was irregular and profuse menstruation, not a hæmorrhage, and that that menstruation has been controlled by the percutaneous use of the current.

In the Post-Graduate clinic I have controlled metrorrhagia where the patient had more or less irregular menstruation and who, after two intra-vaginal treatments of the static electricity, which was given simply because it was not convenient to give the galvanic treatment, became regular. The first menstruation after the first application was at the end of three weeks and the next four, and the next four weeks, and that is all that has been done. In the case of a fibroid there has been no return and all the results have been obtained by the percutaneous use of the galvanic current.

Dr. Morton: Before the gentleman who read the paper concludes I would like to put in one more physiological point, and this in reference to the negative pole. At the Owens College, at Manchester, where there are many opportunities for experiment, the electrode was introduced into the uterus of a rabbit, the negative pole producing a profuse flow of fluid from the uterus, and by reversing, the flow ceased. And as often as this experiment was repeated with the negative pole there was a profuse flow, and the effect was explained by the gentleman who made the experiment as one of cataphoresis; that is, the fluids pass from the anode to the cathode and the passage is something like osmosis although there is no membrane between, and in summing up on the use of these two poles I think it is important that it should be kept in view that this phenomenon occurs. To obtain the full effects of cataphoresis in the treatment of disease, in other words, to accummulate liquids at the negative pole, it is necessary to continue the treatment for some time. Cataphoresis won't happen at once, but requires twenty or thirty minutes, and the liquids will gradually collect at the negative pole. I think it is a physical effect which we cannot afford to overlook, and one which gynecologists should bear in mind in the explanation of the application of one pole or the other.

Dr. Massey: This is an exceedingly interesting question. Dr. Hayd has well reported the cases, and I think we cannot discuss them too minutely. I have often been struck with the ready belief of the surgeon who did not use electricity, in its hæmostatic value, knowing as I did that the immediate effect of nearly all the treatments is to cause more or less slight hæmorrhage. The large carbon electrodes, if they can be inserted, are less liable to cause hæmorrhage than the smaller electrodes and I think that this fact is partly a key to the doctor's difficulty in these cases. A point not brought out in the discussion and one which I consider very import-

ant, is the fact of too frequent treatments. I certainly think that the uterus should not be invaded by an electrode or anything else that causes the amount of local disturbance that it does oftener than every five days at the very most, and at times the intervals should be seven days.

Dr. Goelet is also correct in insisting upon the value of thoroughness in application; in other words, when we make an application, make it thoroughly and then wait until that application has had proper time to act. We should not forget that there are two actions from electricity in causing the arrest of hæmorrhage: one, the constringent effect upon the uterine tissue, and this is the only action we get unless we use the destructive currents. The other, is the destruction or cauterization of the mucous membrane followed by cicatrization.

I think Dr. Hayd is correct in saying that he got good effects from his previous electrical treatment though he used other treatment later on. I would therefore emphasize the necessity for rest and rational treatment during the time of intra-uterine applications of electricity. If you have a case from the country or from a distance in a hurry to get well and get home, you have other electrical means to hasten the cure of that case. We have the galvanic alternative vaginal treatments which can be applied, as well as vaginal treatments with the most powerful faradic currents; such currents I am sure help to control hæmorrhage. Then we have percutaneous treatments which have a certain value. These remarks I think also reply partly to Dr. Morton's question as to the galvanic effects. The galvanic effect in controlling uterine hæmorrhage simply causes the organ worked upon to partly contract and if we carry sufficient current we can contract it, even a myoma.

As to the curette shown, although we would not use it a great deal, it seems to me that the association of a galvano-positive action with the curetting with a platinum curette, would be of value in lessening the hæmorrhage at the time of operation.

Dr. Hahn, of Youngstown, O.: There is one cause of failure presented by Dr. Goelet which I think I had a case which will verify. That was where all the parts of the endometrium were not brought in contact with the electrode. A year ago I treated a patient of that kind in whom the hæmorrhages were very great, but certainly yielded after months of treatment. At that time the electrode entered the uterus about 3½ inches, and after a number of months, as I say, the menses were normal, and continued so for about four months, at which time there was a decided aggravation. After recommencing the treatment a second time, and several treatments having been given, the electrode taking the same position as formerly, excepting at one séance, my electrode found a new field, in which it entered 4½ inches. After this new pocket was found, and a second application had been made, we effectually arrested the hæmorrhage. At any rate, following these two sittings there was an arrest of hæmorrhage for seven weeks, and at the next turn the menses were perfectly normal, and a period of four weeks has passed again. I think I would have had better results had I reached that field before.

Dr. Redding, of Philadelphia: In my experience, these hæmorrhages are due to a too frequent application of the current.

I remember a case of large fibroid extending above the umbilicus, and in which menstruation, both in quantity and duration, was very profuse. I treated this case two or three times a week for three months, with recurring menstruation every two weeks and lasting seven to ten days, and quite profuse every day. I believe this was due to my too frequent applications, as after discontinuing them and applying once a week, they did not occur again. I also remember a case of hæmorrhage which I treated with a positive intra-uterine electrode two or three times a week, even after the stoppage of the hæmorrhage, in which there was a recurrence of the hæmorrhage, and upon stopping the frequent applications, and substituting the use of the negative pole instead of the positive in my intra-uterine applications, I had no further trouble.

Dr. Hayd: I am very much obliged to you for the respectful discussion you have given my paper, and the thought which it has elicited.

If I do not succeed in answering each of you, I hope any gentleman here will not hesitate to rise and ask any question he may desire.

I am not yet satisfied, from the discussion and from my own study of these cases, as to the cause of the hæmorrhage, as to why it was controlled in the first instance and not later; and so long as doubt exists in our mind as to the source of the hæmorrhage, so long there will be many remedies and many applications to control it.

In these cases I am satisfied that the applications were carefully made.

When first called to these patients, the cervix was well dilated, the tissues were soft and relaxed, and there was no difficulty whatever in introducing the electrode; and moreover, I succeeded at once in controlling the hæmorrhage. Now whether the hæmorrhage was due at first to associated endometritis, or to a relaxed condition of the parts, or whether both entered into the causation, I am not prepared to say. At all events, I relieved them. But later on the hæmorrhages recurred and continued, notwithstanding the fact that there had been sufficient applications made. I invariably introduced the sound and dilated the cervix, so that the electrode could be introduced, a large carbon-pointed electrode, with facility and ease, as I am satisfied that one of the most important points in controlling hæmorrhage is to get in as large an electrode as easily and as free from irritation as is possible.

I am satisfied that by having the cervical canal well dilated we encourage drainage and that we do more, we relieve the colic which patients suffer from after treatment by permitting the escape of gases and the accumulation of fluids which are present and which bring on irritation and keep up hæmorrhage. I think it is possible that hæmorrhages are kept up and sometimes caused by abrasions of the uterine canal which cannot be reached by any electrode, no matter how it is dilated. I think it is possible to irritate the ovaries and keep up hæmorrhage in that way, as we often see in metrorrhagia relieved by bromide of potassium. I also believe that it is possible by the simple introduction of a sound to re-excite and irritate adhesions around the uterus as was suggested by Coe in a paper I read in the *Medical Record*.

As the uterine cavity is triangular I think it is possible we do not touch all the lateral angles and that we irritate by the electrodes.

I did not need the chemical effect, I simply wanted the astringent.

As much as I appreciate Dr. Goelet's remarks on the care necessary in the insertion of the electrode, I do not believe that that was the fault in these cases, and I do believe and I am of the opinion that had I not succeeded in resisting the hæmorrhage I should have been satisfied with the intra-vaginal treatment.

I believe that electricity possesses the power, not only by reason of its local chemical effect, but that it exercises its influence in other ways, that it stimulates nerve power and muscle contraction and general nutrition of the tissues with which it comes in contact. If it was not for something more than the chemical action, how do you explain those cases of

Dr. Newman which were cured, and why is not cancer relieved by caustics, as arsenic and other applications. I cannot but believe that there is more than the simple chemical effect.

But as I say, the hæmorrhages continued in these cases and I should have continued with the percutaneous method, and I think I should have accomplished a great deal, but as it was, it was evident that an astringent was required.

As to the cause of the hæmorrhage, whether it was due to the bursting of a vien by reason of the electrode, or whether it was caused by reason of our not be able to touch the surface thoroughly on account of the accumulation of mucus I do not know, but I do not believe it. I think there are certain abrasions of the uterine cavity which cannot be touched by the electrode and that the electrical element is not sufficient to control hæmorrhage in that particular case which probably requires the chemical as well.

As to electric puncture, I would probably have tried it had I thought it necessary. I do not need to make any reference to that; that has been already answered.

There is no sense in using electricity if you paw over the surface of the uterus with a scoop.

I think it is possible to continue treatment too long. The first question I was asked was, why is the treatment continued so long? I did so because the tumor decreased in size, and I discontinued on account of the patient stopping the treatment, but the woman lifted a heavy carpet, and whether she tore a blood vessel or not I am unable to say, yet notwithstanding the greatest care was exercised in the application of electricity it ceased to be of any benefit whatever in controlling the hæmorrhage a second time.

There is no question as to the correctness of the remarks made by Drs. Cleaves and Morton. I believe that many cases of hæmorrhage are stopped by the clay electrode, and the more I use it the more I am satisfied that we cause the absorption of adhesions and irritative tissues to be removed, and that we direct our electric force in the nutrition of that womb to such an extent as to interfere with the continued growth and development of a tumor, as well as to control the hæmorrhages.

A question which often presents itself to my mind, and one which I consider of great importance, is, that we should do as little intra-uterine medication as possible. The more you can impress yourselves that it is the endometrium at fault, then make your intra-uterine applications; but unfortunately many cases treated by the sound have no reason whatever. I reported a paper in the *New York Medical Record*, in which I cited a number of cases where I controlled hæmorrhage without the intra-uterine method at all.

Another point I tried to bring out in my paper, and I wish to state that my ambitions are not surgical, and that I took up the study of electricity so that I would not have to resort to any more surgery than possible, and knowing the power of electricity the more I am satisfied we should be more conservative in the treatment of these cases. For at the most the symptom will only exist for a few years irrespective of treatment or operation, and will need no treatment from you or anybody else aside from the anxiety to themselves, and the cases I have mentioned thoroughly demonstrate that.

G. Betton Massey, M. D., of Philadelphia, President of the American Electro-therapeutic Association, Instructor in Electro-gynecology in the Philadelphia Polyclinic, etc., read a paper entitled

ELECTRO-PUNCTURE; ITS MOST USEFUL MODIFICATIONS, AND ITS VALUE IN THE TREATMENT OF FIBROID TUMORS.

The method of inducing atrophy of myo-fibromata of the uterus by currents from electrodes introduced into their substance by puncture deserves separate consideration from other related methods for several reasons, chief of which is the fact that it is essentially a bolder and more radical procedure than the other electrical methods of dealing with these growths. Gynecologists who use electricity are greatly divided as to its value and freedom from risk, some rejecting it altogether, and others considering it the only method worthy of use. My own position in the matter has been represented as that of warm advocacy of puncture; a statement that was a surprise to me at the time, although I have recently had reason to look on the procedure with increasing favor under certain conditions and circumstances.

There is no doubt that this method presents itself with much favor to the beginner in the treatment of fibroid tumors, and I think this is often because tyros have the false impression that electricity acts in these growths by dissolving them. No error could be greater, and it is a mistake that is apt to lead to harmful work in the direction of overtreatment. It is true that we do not know the mode in which it does act, but my observation has convinced me that the period between the treatments is an essential part of the treatment itself, to be carefully arranged with each case, and that results are not proportionate to current strength alone. These two facts, when taken together, certainly indicate that electricity does not accomplish the reduction and dissipation of fibroid tumors by electrolysis pure and simple, for this is a chemical disintegration depending in extent only on the number of millicoulombs used. By an increase in the current it would be possible to dissolve the tumor at once and at one application if this were the method of its action. In the cases under my observation in which the tumors have disappeared no such currents were used. The current strength was frequently smaller than that used in tumors that did not disappear. However we may explain it, it is certain that the absorbents bear an important relation to a shrinking fibroid after each electrical seance, and that mere electrolysis is but a part of the work, and a part that may be inferior to a more subtle interference with tissue integrity and metamorphosis.

From experience I am not disposed to think that puncture presents necessarily any advantages over intra-uterine applications where either method is feasible. In certain cases apparently well adapted to both methods, I have observed that it is better, but this seemed to be due to irritative conditions of the appendages that hindered or nullified the good effects of the intra-uterine applications. In such cases the punctures were much better borne and produced no reaction.

Speaking of vaginal puncture alone, and premising that it should never be performed unless a portion of the tumor can be reached directly through the posterior vault, it may be said of it that the spot punctured is accessible and may be kept under rigid antisepsis, which is a distinct advantage over the prolonged application of a strong current to a restricted spot within the uterus. Having said as much, I may turn to some remarks on how I think vaginal puncture should be done.

From the beginning I have urged that the trocar should be insulated through the healthy tissue in order that the latter may heal at once. This may be called *buried puncture*. Not wishing to make a patulous opening or to have a possible slough at the point of application, both of which I believe are liable to happen with the positive pole, my punctures have been almost invariably negative. To meet these indications I have recently modified the specially insulated trocar formerly employed, and now use one of steel, combining certain features of my own and of Apostoli's latest pattern. The one exhibited to you has, as you see, the shoulder now employed, I believe, by Apostoli to prevent the instrument being inserted beyond one-half centimeter, but in this

case the shoulder is one and a half centimeters from the point, permitting a possible insertion to the latter depth. The first half from the point only is exposed for the electrical action, the remaining centimeter being covered by hard rubber which is flush with the needle point, the diameter of the needle here having been lessened. The rubber insulation is vulcanized on the shaft, and presents a continuous insulation from the point to the attachment socket at the posterior end. This has been the most satisfactory instrument so far used by me, being strong and stiff, free from impedimental handles and sheathes, and incapable of being inserted deeper than intended. It can be made aseptic by boiling, and I have even employed the spirit flame when prepared to remedy any damage it might cause to the insulation.

As I said before, buried vaginal puncture will reduce fibroids and remove pain when the intra-uterine method is not tolerated.

I have, moreover, never had a mishap or bad effect from its use, and have had pain following it on but one occasion, which was possibly due to a dispensary patient walking some distance home within an hour after the puncture. This freedom from mishaps I nevertheless attribute almost entirely to a careful selection of cases, as I can conceive that the procedure would risk injury to important organs if employed in any case other than those in which the tumor is accessible by virtue of a practical protusion into the posterior vaginal vault.

There is another form of buried puncture to which I wish to direct your attention particularly. I allude to insulated puncture through the abdominal wall. Abdominal electro-puncture has been condemned by myself, in unison with recent workers in electro-gynecology, but the thought occurred to me some months ago that my condemnation was of that unwise kind that precedes a trial, and that the bad results reported in the past occurred in the pre-aseptic days. There are certain abdominal tumors of large bulk that are so far removed from the pelvic end of the cervix and vicinity of the vagina as to make intra-uterine treatment difficult, tedious and painful, and vaginal puncture impossible. These tumors are beneath our hands externally, with nothing between us but a layer of fat and muscle and two layers of peritoneum. As contrasted with the pelvic route, puncture from this direction is free from the embarrassing neighborhood of important organs, is direct and exact, and possesses the one disadvantage of being intra-peritoneal. Experience in two cases, which have been punctured on several occasions, has convinced me that the peritoneal bugbear is overdrawn, at least when aseptic precautions are observed. Peritonitis and its effect, adhesion, can only follow the introduction of septic material, or a possible necrosis from a too strong positive puncture.

The details of the procedure as advised by me are as follows: The punctures being invariably negative small steel needles are used, three at each puncture, attached by branched wires to a single pliant copper wire as a conducting cord. No. 22 or 24 insulated wire is much more convenient than an ordinary conducting cord. For the puncture needles there can be no better form devised than the straight Hagedorn surgical needle found in every instrument shop. These needles possess the advantage of great ease of penetration combined with lightness and strength, and the slit made by them admits the increased bulk of the covering without hitch. This slit form of puncture also heals easily without a scar. The needle should be about 2½ inches long, the first half inch from the point being left bare, and the portion above covered by hard rubber vulcanized on the shank as thinly as consistent with good insulation. It is easily attached to the copper wire by the latter being passed through the eye and wound around the shank—by simple threading in other words, or the needles may be permanently soldered to cord tips as suggested by Dr. Walling.

These needles, properly insulated, sterilized and attached to the negative pole of the battery by the branched wire, are easily and painlessly thrust into the tumor through the skin, the surface having been thoroughly asepticized previously by the most approved method, and chilled by rhigolene just before the insertion of the needle. The current strength has varied in my punctures between 60 and 100 ma., and the duration from six to eight minutes. After removal of the needles the minute spots made are sealed with a little borated cotton and plaster, or by the direct application of collodion.

As to frequency, it is probably best to allow at least two or three weeks to elapse between each application of electricity in this manner, although this depends on the size of the tumor and the field of tumor-surface accessible to the method. It need scarcely be said that no punctures should be made at any spot that might be covered with intestinal convolutions.

The immediate inconveniences that follow these punctures, such as tenderness and pain, are generally less than those following an intra-uterine application. One patient under this treatment was kept in bed in the Sanatorium for twenty-four hours after each puncture as a measure of precaution, but another was punctured at the Dispensary for Women and walked home shortly afterward on each occasion.

In neither of these cases has sufficient time yet elapsed to permit a full determination of results, but in each case there has been a marked decrease in size, and in one case a lessening of the pain that rendered the patient helpless. There has not been an unfavorable incident of any kind, and the absence of adhesions between the tumors and the abdominal walls is easily proven. The result, in my opinion, is to open anew the question of the propriety of employing buried abdominal electro-puncture in the treatment of those large fibroid tumors, both intra-mural and sub-peritoneal, that lie above the pelvic brim.

Dr. Bigelow: I appreciate my privilege very much in discussing this paper. He has been doing very much of this, and with very great care. Dr. Massey's work has been done in a scientific and modest way, with a great deal of acumen, and he has done almost all the punctures made in our dispensary. He is much more original than I am, so that almost all these punctures were made by him, and on his own responsibility, and the majority of the results were good. In his private practice he is getting results much better than in the dispensary.

As to intra-uterine applications of the current I can conceive by the contiguity of structure that you can reduce tumors. In sub-peritoneal you must puncture, as you cannot get at it by contiguity of structure. If you use mild intra-uterine currents at all events, you will relieve the patient of all the magnetic fears beforehand, and in the second place she has confidence in you, confidence in the method, and the influence of the mind in these cases is not inconsiderable, and you cure the endometritis which is nearly always co-existent with the tumor. It has been our practice at the clinic to precede these treatments by intra-uterine positive galvanic applications, and then followed by the puncture. Sufficient time has not elapsed to give judgment upon the cases of electro-puncture through the abdominal walls. It is possible that the case at the dispensary has been reduced; it has changed its form, but I do not think it has diminished very much. The tumor is more dome-like than it was. I believe that it is a good thing, and shows how it can help the surgeon in bringing it nearer the surface. The abdominal walls are so thin that puncture can

be done easily. Although all statistics are against it, there are no instances of death from it, and I believe that this case of Emma Howard will improve if she will stop drinking.

Dr. Goelet: I have listened with considerable interest to the paper by Dr. Massey, and I am very much interested in the subject. A few years ago I did puncture, but after visiting Apostoli I abandoned it; not because I had any failures but because I was afraid I might have. I think Dr. Massey has made a good point when he says we should have a longer interval between our applications, not only in puncture, but intra-vaginal applications. It is desirable that the effect of one treatment should subside before applying another.

As to the technique of puncture, there is a question as to the advantages of the buried puncture, or of the puncture by a needle not insulated. Two years ago, when I was in Paris, Apostoli was using the uninsulated needle, insulated only to the vaginal surface, and he was very successful with it. Since then he has adopted the buried puncture, I think about a year ago, for what reason I do not know.

For the reason that the vaginal surface is not so very sensitive to puncture, the needle can be introduced and scarcely be felt by the patient, unless the needle is large and much pressure is needed to cause it to enter. I think an important point is that our needles should be as fine as possible. All that is necessary is to introduce the current into the structure, which can be done with a small as well as a large needle.

I had a needle for use in buried puncture, made of platinum and iridium, in order to obtain sufficient rigidity in the needle and prevent bending, and I had to resort to the expedient of rounding it toward the tip of the needle, so as to separate the shank and prevent bending. It is insulated to within a quarter of an inch of the point with a sliding motion, fixed by a thumb screw, which permits the needle to be pushed into the structure as much as needed, after fixing the screw attachment so as to limit the depth of the penetration. To apply it, withdraw the needle so as to have it come within the end of the tip, and placing the tip against the vaginal surface, and the block of rubber through which it passes holds it stiff. This would not be necessary if steel were used, but with platinum and iridium it is. We should be particular about the insulation. We should not have insulation which would peel off. We want hard rubber insulation, gummed on the needle.

While on this subject, I will name a few points as to the indications for puncture, somewhat different, perhaps, and apart from those touched upon by Dr. Massey. I find that Apostoli is using it for the relief of pain, and he does not use more than 50 milliampères for five minutes. He uses it for those painful masses, particularly in the broad ligament, and I was very much surprised at the rapid and great relief afforded by the use of this current in those cases.

Of course we have an anæsthetic effect by the positive pole and a constringent effect upon the blood vessels, so that the phenomenon of the relief of pain is easily explained. It seemed to me, however, that puncturing inflicted a traumatism, but it did no harm, and on my return I used it extensively. I do not think fifty milliampères are necessary, but that twenty or thirty are sufficient. If we can use ten milliampères, which can be used without any danger whatever, it is a good thing. Now as to the objection of continuing the positive pole, as you wanted to use the negative pole to produce absorption: you can produce absorption with a positive pole, and absorption goes on just as well, if not better, than with the negative. I think in those cases of soft myoma that the positive pole is much better than the negative pole.

In regard to abdominal puncture, vital statistics on this subject have been due to the fact that the currents used have been too strong. A few years ago every body doing abdominal puncture worked in the dark with the idea to destroy tissue. I think that it is a point for deep consideration which Dr. Hutchinson has brought out—that of the reduction of tumors by abdominal puncture with the use of ten to twenty milliampères and several needles; no one can object to the current. There is not enough of it to hurt or to cause adhesions. His needles are no larger than exploring needles and I see no reason why we should not use abdominal puncture, and I think that the objections which have been given are due to the fact that too strong currents have been used, and if these strong currents are not necessary then abdominal puncture is safe.

Another point which Dr. Hutchinson made—whether these punctures being moderate and painless, the patient being able to bear them with a short rest in bed afterwards, a puncture is justifiable, the punctures being made every day for a month, and then the patient being sent away for as many days, allowing a rest for that period, and then the resumption of treatment, and in the meantime the results of the treatment being noted. There is one point in that treatment of advantage. In the first place the patient feels you are doing something for her, as you are treating her every day. These patients are not satisfied with treatments once a week, they think you are not doing enough for them, particularly if they come from a distance, and if you treat them every day for a month, and then send them home for a month I think it is a good thing and not a tiresome treatment.

Dr. Hayd: Every one of the papers we have had have been so good that I do not like to sit down and say nothing.

I think I can say good words in favor of the vaginal puncture for cellulitic deposits; it materially assists in resolution and relieves pain and is practically without danger. I am satisfied, however, that we get in more dangerous territory when we begin to puncture through the abdomen. The longer I practice medicine the more I am convinced of this point. We often find complications which give a great deal of trouble after we have examined the patient and think we have a large fibroid, and then upon opening the abdomen find an ovarian cyst which is encapsuled, or a tumor, fibroid in character, which has undergone more or less degeneration, with little cysts or abscesses and yet perhaps no history of a previous septic condition, and I believe the more you suggest abdominal puncture the more possible harm is done, and often a great deal more harm than good. There will be a few enthusiastic and good men like Dr. Massey, who have good results from good work, but there is a question in my mind whether you do not do harm by sending it out by our authority to the general public for use. The intestines do come above the tumor and there are adhesions, perhaps, as also the omentum may be found there, or perhaps you puncture a blood vessel, and then you get hematocele. In the vagina the danger is not so great as the puncture through the abdomen, and I do not agree with Dr. Bigelow when he says that subperitoneal fibroids can not be helped by the vaginal method, for in my cases I believe that the tumor was largely sub-peritoneal, and I am satisfied that the treatments were of great benefit to the patient. Probably that can be explained also, as the sound is directed posteriorly and the current was directed there. Besides, the symptoms of sub-peritoneal tumors do not occur very rapidly and there is no hæmorrhage. The only danger is from pressure symptoms, and it does not seem possible that there can be sub-peritoneal tumors of such size as to give dangerous symptoms unless they are partially intramural, and even then I think that intra-uterine medication does great good.

(To be continued.)

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